Aristotle

De Anima

Translated
With Introduction and Notes
By

C. D. C. Reeve

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For

Bela and Eliana

τὸ γῆρας οὐ τῷ τὴν ψυχήν τι πεπονθέναι, ἀλλ’ ἐν ᾧ,
καθάπερ ἐν μέθαις καὶ νόσοις.

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Preface

Readers of the *De Anima* in translation find themselves in territory whose apparent familiarity is often deceptive and inimical to proper understanding. Even what the *De Anima* is about is not quite the soul as we think of it. A worthwhile translation must try to compensate for this deceptive familiarity without producing too much potentially alienating distance and strangeness in its place. Accuracy and consistency are essential to achieving this goal, obviously, but so too are extensive annotation and commentary. Some of this can consist, as it does here, of texts selected from other works by Aristotle himself, so that, while traveling through the region of the Aristotelian world the *De Anima* describes, the reader can also travel through other regions of it, acquiring an ever widening and deepening grasp on the whole picture—something that is crucial, in my view, to understanding any part of it adequately or perhaps at all. But much commentary must simply be explanatory, clarificatory, and interpretative.

To make the journey as convenient as a journey through a work as difficult as the *De Anima* can be, footnotes and glossary entries are replaced by sequentially numbered endnotes, so that the information most needed at each juncture is available in a single place. The non-sequential reader, interested in a particular passage, will find in the Index a detailed guide to places where focused discussion of a term or notion occurs. The Introduction describes the book that lies ahead, explaining what it is about, what it is trying to do, and how it goes about doing it. It is not a comprehensive discussion of all the important topics the *De Anima* contains, nor an attempt to situate Aristotle's thought in the history of psychology and the philosophy of mind more generally. Nor is it, I should add, an expression of scholarly consensus on the issues it does discuss—insofar as such a thing exists—but my own take on them. The same goes for many of the more interpretative notes. They are a place to start, not a place to finish—a first step in the vast dialectical enterprise of coming to understand Aristotle for oneself. It is a reader willing to undertake this task that Aristotle requires and most rewards and that I have most had in mind.

I have benefited from the work of previous translators, especially David Hamlyn, J. A. Smith, and (though it appeared too late for me to use systematically) Christopher Shields. The translations in the Ancient Commentators on Aristotle Series of Philoponus, Simplicius, and Themistius were also most helpful, as were the commentaries of those ancient writers themselves, as well as the more recent ones of R. D. Hicks, Ronald Polansky, and David Ross.

I thank David Riesbeck for his careful line reading and for his many useful comments, suggestions, and corrections.

I renew my thanks to ΔKE, the first fraternity in the United States to endow a professorial chair, and to the University of North Carolina for awarding it to me. The generous research funds, among other things, that the endowment makes available each year have allowed me to travel to conferences and to acquire books, computers, and other research materials and assistance, without which my work would have been much more difficult.

Abbreviations

Aristotle

Citations of Aristotle's works are made to Immanuel Bekker, *Aristotelis Opera* (Berlin: 1831 [1970]), in the canonical form of abbreviated title, book number (when the work is divided into books), chapter number, page number, column letter, and line number. In the case of the *De Anima*, however, the abbreviated title is usually omitted. A * indicates a work whose authenticity has been seriously questioned. The abbreviations used are as follows:

APo.	*Posterior Analytics*
APr.	*Prior Analytics*
Cael.	*De Caelo (On the Heavens)*
Cat.	*Categories*
DA	*De Anima (On the Soul)*
Div. Somn.	*On Divination in Sleep* (Ross)
EE	*Eudemian Ethics*
Fr.	*Fragments* (Rose)
GA	*Generation of Animals*
GC	*On Generation and Corruption* (Joachim)
HA	*History of Animals* (Balme)
IA	*Progression of Animals (De Incessu Animalium)*
Insomn.	*On Dreams* (Ross)
Int.	*De Interpretatione*
Juv.	*On Youth and Old Age, Life and Death, and Respiration* (Ross)
Long.	*On Length and Shortness of Life* (Ross)
MA	*Movement of Animals* (Nussbaum)
MM	*Magna Moralia** (Susemihl)

Mem.	*On Memory* (Ross)
Met.	*Metaphysics*
Mete.	*Meteorology*
NE	*Nicomachean Ethics*
PA	*Parts of Animals*
Ph.	*Physics*
Po.	*Poetics*
Pol.	*Politics*
Protr.	*Protrepticus* (Düring)
Rh.	*Rhetoric*
SE	*Sophistical Refutations*
Sens.	*Sense and Sensibilia*
Somn.	*On Sleep*
Top.	*Topics*

I cite and translate the *Oxford Classical Texts* (OCT) editions of these works, where available, otherwise Bekker or the editions noted:

Balme, D., *Aristotle: Historia Animalium* (Cambridge, 2002).

Düring, I., *Aristotle's Protrepticus: An Attempt at Reconstruction* (Göteborg, 1961).

Joachim, H., *Aristotle on Coming to Be and Passing Away* (Oxford, 1926).

Nussbaum, M., *Aristotle's De Motu Animalium: Text with Translation, Commentary, and Interpretative Essays* (Princeton, 1978).

Rose, V., *Aristotelis Fragmenta* 3rd ed. (Leipzig, 1886).

Ross, D., *Aristotle Parva Naturalia* (Oxford, 1955).

Susemihl, F., *Aristotelis Magna Moralia* (Leipzig, 1883).

Plato

Chrm.	*Charmides*
Crat.	*Cratylus*
Euthphr.	*Euthyphro*
Lg.	*Laws*

Phd.	*Phaedo*
Phdr.	*Phaedrus*
Prm.	*Parmenides*
Rep.	*Republic*
Smp.	*Symposium*
Sph.	*Sophist*
Tht.	*Theaetetus*
Ti.	*Timaeus*

Translations of Plato in the notes are based on those in J. M. Cooper, ed., *Plato: Complete Works* (Indianapolis, 1997).

Other Abbreviations

Barnes = J. Barnes, *The Complete Works of Aristotle: The Revised Oxford Translation* (Princeton, 1984).

Dooley = W. E. Dooley, S. J., tr. *Alexander of Aphrodisias, On Aristotle's Metaphysics 1* (Ithaca, 1989); *Alexander of Aphrodisias, On Aristotle's Metaphysics 5* (Ithaca, 1993).

DK = H. Diels and W. Kranz, eds. *Die Fragmente der Vorsokratiker*, 6th ed. (Berlin, 1951).

DL = Diogenes Laertius, *Lives of Eminent Philosophers*, ed. T. Dorandi (Cambridge, 2013).

Hamlyn = D. W. Hamlyn, *Aristotle's De Anima Books II and III (with Certain Passages from Book I)* (Oxford, 1968).

Hicks = R. Hicks, *Aristotle De Anima with Translation, Introduction, and Notes* (Cambridge, 1907).

Isnardi = M. Isnardi Parente and T. Dorandi, *Senocrate e Ermodoro, Testimonianze e Frammenti* (Pisa, 2012).

Jannone = A. Jannone and E. Barbotin, *Aristotle: De L'Âme* (Paris, 2009).

Nussbaum = M. Nussbaum, "The Text of Aristotle's *De Anima*," in M. Nussbaum and A. Rorty (eds.) *Essays on Aristotle's De Anima* (Oxford, 1992), pp. 1–6.

OCT = D. Ross, *Aristotelis De Anima* (Oxford, 1956).

Polansky = R. Polansky, *Aristotle's De Anima* (Cambridge, 2007).

R^3 = V. Rose, *Aristotelis Fragmenta* 3rd ed. (Leipzig, 1886).

Ross = D. Ross, *Aristotle De Anima: Edited, with Introduction and Commentary* (Oxford, 1961).

Shields = C. Shields, *Aristotle De Anima* (Oxford, 2016).

Tarán = L. Tarán, *Speusippus of Athens* (Leiden, 1981).

TEGP = D. Graham, *The Texts of Early Greek Philosophy: The Complete Fragments and Selected Testimonies of the Major Presocratics* (Cambridge, 2010).

van der Eijk = P. van der Eijk, *Philoponus: On Aristotle's On the Soul 1.3–5* (Ithaca, 2005).

Introduction

Life and Works

Aristotle was born in 384 BC to a well-off family living in the small town of Stagira in northern Greece. His father, Nicomachus, who died while Aristotle was still quite young, was allegedly doctor to King Amyntas of Macedon. His mother, Phaestis, was wealthy in her own right. When Aristotle was seventeen his guardian, Proxenus, sent him to study at Plato's Academy in Athens. He remained there for twenty years, initially as a student, eventually as a researcher and teacher. When Plato died in 347, leaving the Academy in the hands of his nephew, Speusippus, Aristotle left Athens for Assos in Asia Minor, where the ruler, Hermias, was a patron of philosophy. He married Hermias' niece, Pythias, and had a daughter by her, also named Pythias. Three years later, in 345, after Hermias had been killed by the Persians, Aristotle moved to Mytilene on the island of Lesbos, where he met Theophrastus, who was to become his best student and closest colleague.

In 343 Aristotle seems to have been invited by Philip of Macedon to be tutor to the latter's thirteen-year-old son, Alexander, later called "the Great." In 335 Aristotle returned to Athens and founded his own institute, the Lyceum. While he was there his wife died and he established a relationship with Herpyllis, also a native of Stagira. Their son Nicomachus was named for Aristotle's father, and the *Nicomachean Ethics* may, in turn, have been named for him or transcribed by him. In 323 Alexander the Great died, with the result that anti-Macedonian feeling in Athens grew stronger. Perhaps threatened with a formal charge of impiety (*NE* X 7 1177^b33), Aristotle left for Chalcis in Euboea, where he died twelve months later, in 322, at the age of sixty-two.

Legend has it that Aristotle had slender calves, small eyes, spoke with a lisp, and was "conspicuous by his attire, his rings, and the cut of his hair." His will reveals that he had a sizable estate, a domestic partner, two children, a considerable library, and a large circle of friends. In it Aristotle asks his executors to take special care of Herpyllis. He directs that his slaves be freed "when they come of age" and that the bones of his wife, Pythias, be mixed with his "as she instructed."

Although the surviving writings of Aristotle occupy almost 2,500 tightly printed pages in English, most of them are not works polished for publication but sometimes incomplete lecture notes and working papers. This accounts for some, though not all, of their legendary difficulty. It is unfair to complain, as a Platonist opponent did, that Aristotle "escapes refutation by clothing a perplexing subject in obscure language, using darkness like a squid to make himself hard to catch," but there is darkness and obscurity enough for anyone, even if none of it is intentional. There is also a staggering breadth and depth of intellect. Aristotle made fundamental contributions to a vast range of disciplines, including logic, metaphysics, epistemology, psychology, ethics, politics, rhetoric, aesthetics, zoology, biology, physics, and philosophical and political history. When Dante called him "the master of those who know," he was scarcely exaggerating.

The De Anima *and Its Subject-Matter*

One thing we might mean by *De Anima* is the Greek we now find inscribed on the pages that make up David Ross' Oxford Classical Text (OCT), first published in 1956, which is the basis of the present translation. This is the descendant of texts derived—via manuscripts copied in the Byzantine period (from the tenth to the fifteenth centuries AD)—from manuscripts that derive from the edition of Aristotle's works produced by Andronicus of Rhodes in the first century BC. Ross' edition, like most other modern editions, records in the textual apparatus at the bottom of the page various manuscript readings alternative to the one he prints in the body of his text.* In some cases, I have preferred one of these readings and have indicated so in the notes. Divisions of the text into books and chapters are the work of editors, not of Aristotle himself. Also present in Ross' text are the page numbers of Bekker, *Aristotelis Opera*. These appear here in the margins of the printed version and enclosed in | | in the electronic one. Occasional material in square brackets [ ] in the text is my addition.

The second thing we might mean, and are perhaps more likely to mean, by the *De Anima* is the work itself—that more abstract thing that is embodied in a good Greek text and (ideally) in any translation of it. And about its subject-matter at least it is possible to be brief—it deals with *psuchê* (Latin: *anima*; English: "soul"), which is the principle of vegetable and animal life and also (in one of its forms) of divine eternal life, and so deals too with various life processes, such as increase and decrease, growth and withering,

---

*Brief discussions of the text of *De Anima* can be found in Nussbaum and in Shields, xlv–xlvii.

animal movement and action, and the desires that cause it, as well as with perception and cognition. It is at once a contribution to biology, then, to psychology, and to theology. To see how and why it can be a contribution to all three—to see why to Aristotle these seem to comprise a single object of study—we need to start a bit further back than *De Anima* itself does, with an exploration of the place of *psuchê* or soul in nature more generally.

The Soul and Its Place in Nature

According to Aristotle we find in nature an apparently continuous scale of beings, in which animate beings—beings with souls—differ only very slightly from inanimate ones in their level of formation:

> Nature proceeds from the inanimate to the animals by such small steps that, because of the continuity, we fail to see to which the boundary and the middle between them belongs. For the first kind (*genos*) of thing after the inanimate is the plant kind, and, among these, one differs from another in seeming to have a greater share of life; but the whole kind, in comparison with the other inanimate bodies, appears almost as animate, while in comparison with the animal kind it appears inanimate. The change from plants to animals is continuous, as we said before. (*HA* VIII 1 588^{b}4–12)

The sublunary elements (earth, water, air, fire) aside, the simplest beings on this scale are homoeomerous or uniform stuffs, such as wood, olive oil, flesh, and bone, whose parts have the same account as the whole (*GC* I 1 314^{a}20, 10 328^{a}10–12). These are constituted out of the elements in some ratio, when the productive capacities or potentialities (hot, cold) in the elements master the corresponding passive ones (dry, moist):

> We must describe the operations of the productive capacities and the forms taken by the passive ones. First, unconditional coming to be in general and natural change and the corresponding natural passing-away are the function of these productive capacities; and these processes occur in plants, animals, and their parts. Unconditional natural coming to be is a change produced by these capacities, when present in the right ratio, in the underlying matter of a natural thing, and this is determined by the passive capacities we mentioned. The hot and the cold cause the thing to come to be when they master the matter. (*Mete.* IV 1 378^{b}26–379^{a}1)

The fundamental form of such mastery is concoction (*pepsis*), which is responsible for producing a uniform stuff, and for preserving its nature thereafter:

> Concoction is a completion effected by a thing's own natural heat from the corresponding passive capacities, these being definitive of the matter proper to the thing. For when a thing has been concocted it has been completed and brought into being. Moreover, the starting-point of the completion is its own proper heat. . . . The end of the process of concoction is the thing's nature—but nature in the sense of form, that is, substance. . . . Concoction, then, is what everything undergoes when its matter—that is, its moisture—is mastered; for this is what is given definition by the thing's natural heat, and as long as the defining ratio exists in it, it possesses its nature. (*Mete.* IV 2 379^{b}18–35)

Natural heat is thus *formative* heat—the principle in nature partly responsible for the coming to be and preservation of hylomorphic (matter-form) compounds.

Uniform stuffs, as minimally formed, have a low level of such heat. As form is added, so that stuffs come to constitute the structural parts of animals (such as hands and eyes), and these to constitute whole animals of different degrees of complexity, natural heat increases: "the more complete animals are those that are hotter in nature and more fluid—that is, not earthy" (*GA* II 1 732^{b}31–32). Such animals more completely pass on their form to offspring (733^{a}33–^{b}2). Since human beings are the most complete or most perfect animals (II 4 737^{b}26–27), they are also hottest and most estimable:

> All animals with lungs breathe. . . . The reason some have this part, and why those having it need to breathe, is that the more estimable of the animals are hottest; for at the same time their soul must have been made more estimable, since they have a more estimable nature than the cold ones. Hence too. . . that animal in which the blood in the lung is purest and most plentiful is the most upright, namely, man. The reason he alone has his upper part directed to the upper part of the universe is that he possesses such a part. (*Juv.* 13 477^{a}13–23)

Although male and female human beings both have formative heat, its level is not the same in each. This is revealed by the different roles played by their respective seminal products—seed (*sperma*, *gonê*) in the case of males, menses (*katamênia*) in that of females—in reproduction: "what the male contributes to generation is the form and the efficient cause, while the female contributes the material" (*GA* I 20 729^{a}9–11).

What seed does to menses to form it into a fetus is likened to what a carpenter does to wood to make it into a piece of furniture:

> Nothing comes away from the carpenter to the matter of the timbers, nor is there any part of the craft of carpentry in the product, but the shape and the form are produced from the carpenter through the movement in the matter. And his soul in which the form is and his scientific knowledge move his hands or some other part in a movement of a particular sort, different when the product is different, the same when it is the same, and the hands move the instruments and the instruments move the matter. Similarly, the male's nature, in those that emit seed, uses the seed as an instrument containing actual movements, just as in craft productions the instruments are in movement; for the movement of the craft is in a way in them. (*GA* I 22 730^{b}11–23)

In the way that the movement of the carpenter's hands has its source in the form of the product present in his soul, the movement in the seed has its source in a form—namely, that of the male progenitor. Hence the very same formal constituents exemplified as potentialities in his form are exemplified as movements in his seed, guaranteeing that these movements are (at least to begin with) formally identical to the potentialities that transmit them: "When seed comes into the uterus it causes the female's menses to take shape and moves it in the same movement in which it itself is moving" (*GA* II 3 737^{a}20–22). Were this not so, their transmission to seed could not result in the transmission of the male's form to the offspring.

What enables the transmission of such movements to seed is that they are present in the male's blood—where, encoded in formative heat, they are responsible for the preservation of his form—and that seed itself is a very concentrated or concocted blood product:

> In blooded animals, blood is the final form of the nourishment . . . and since seed too is a residue from nourishment, that is, from its final form, surely it follows that seed will be either blood or something analogous to it or something constituted out of these. Every one of the parts of the animal is constituted out of blood as it becomes concocted and somehow divided into portions. . . . Therefore, seed is evidently a residue from that nourishment which is a type of blood—that

> which is finally distributed to the parts. This is why seed has great potentiality . . . and why it is reasonable that offspring should resemble their parents. For that which goes to all the parts [namely, blood] resembles what is left over [seed]. Hence the seed of the hand or of the face or of the whole animal is in an undifferentiated way a hand, or a face, or a whole animal—that is, what each of the latter is actually, such the seed is potentially. (*GA* I 9 726^{b}1–18)

When the male's formal movements are transmitted by concoction to menses, therefore, they first initiate the formation of the fetal heart. Once the heart is formed, the fetus then grows automatically, drawing its nourishment from its mother through the umbilicus, and in the process transmitting formative movements via the blood to the other developing parts (II 1 735^{a}12–26).

Menses is also a type of seed—"seed that is not pure, but needs working on" (*GA* I 20 728^{a}26–27). For a female's formative heat is cooler than a male's, and so cannot complete the final stage of forming or concocting menses into pure seed (I 20 728^{a}18–21). Nonetheless, a female can concoct her menses (or the seminal residue in it) to within that last stage of becoming pure seed, so that for each actual movement in seed, there is a corresponding potential movements stemming from the female form (IV 3 768^{a}11–14). While menses has the potentiality to move in such a way as to become a fetus, therefore, it cannot do so until it is set moving by seed, since "so far as things formed by nature or by human craft are concerned, the formation of what is potentially is brought about by what is actually" (II 1 734^{a}29–31).

Just which movements will underlie the offspring's form—whether, for example, it will be male or female—depends on the interaction between the movements in the seed and the potential movements in the menses (*GA* IV 3 768^{b}5–12). If a male movement is transmitted successfully to the menses, the offspring will have the corresponding component of the male form. If it fails to be transmitted, it may be wholly resisted, in which case it is replaced by the opposing movement in the menses, or resisted to a lesser degree, with different consequences in each case (*GA* IV 3 768^{a}7–9, 768^{b}7–8).

While seed, as a concocted blood product, is a very purified type of nourishment, its vital heat, in which its formative movements are encoded, is of a quite special sort:

> The potentiality of all soul seems to be associated with a body different from and more divine than the so-called elements. . . .

> For within the seed of everything there is present that which makes the seeds be fertile, the so-called hot. This is not fire or that sort of potentiality, but the *pneuma* enclosed within the seed and within the foamy part—more precisely, the nature in the *pneuma*, which is analogous to the element that constitutes the stars. (*GA* II 3 736^{b}29–737^{a}1)

Characterized as "connate" (*sumphuton*), because it is not drawn in from outside but generated and maintained inside the body (*PA* II 2 648^{a}36–649^{b}8), it is the sort of *pneuma* that plays a fundamental role in nourishment and reproduction (*GA* II 6 741^{b}37–742^{a}16). The reproductive system, indeed, is in many ways simply a means of transmitting the form-preserving digestive system (of which blood and the heart are parts) into new matter, thereby initiating the formation of a new self-maintaining creature. That is why both functions are assigned to the *threptikon* or nutritive part of the soul (*DA* II 4 416^{a}19–20, 416^{b}11–12).

Although many natural beings (for example, inanimate ones) do not preserve their form by means of nourishment, or transmit it by means of sexual reproduction, *pneuma* has a fundamental role to play in their existence too:

> Democritus omitted to mention the for-the-sake-of-which [or final cause], and so thought that all the things that nature uses are due to necessity. And they are. At the same time, however, they are for the sake of something, that is, for the sake of what is in each case better. Thus nothing prevents the teeth from being formed and lost in the way he says, but it doesn't happen because of these, but because of the end. The [things he cites] are causes in the sense of being movers, instruments, and matter, since it is reasonable, indeed, for nature to make most things using *pneuma* as instrument. For just as some things have many uses where the crafts are concerned—for example, the hammer and the anvil in blacksmithing—so does *pneuma* in those constituted by nature. (*GA* V 8 789^{b}2–12)

Yet despite its manifest importance, no focused discussion of *pneuma* occurs in Aristotle's extant works. This makes it difficult to determine his views with confidence. But by piecing together what he does say, a reasonably clear picture emerges.

From its role in embryology alone, for example, we can see that *pneuma* transmits movement by being itself in movement. The role accorded to it in animal movement confirms this fact:

> [*Pneuma*] is evidently well disposed by nature to impart movement and supply strength. At all events, the functions of movement are pushing and pulling, so that its instrument (*organon*) must be capable of expanding and contracting. And this is just the nature of *pneuma*, since it contracts and expands without constraint, and is able to pull and push for the same reason. (*MA* 10 703^{a}18–23)

Moreover, because the movements it imparts are formative, they must be complex and various—able, as geneticists now put it, to *code for* all of an animal's parts. Since movements are "either in a circle or in a straight line or in a combination of the two" (*Ph.* VIII 8 261^{b}28–29), all the complex movements *pneuma* can produce must be some such combination. What makes this possible is that by actively expanding and contracting, and so pushing and pulling, it can cause not just rectilinear but also circular movements: "Spinning in a circle is a compound of pushing and pulling, since what causes something to spin must be pushing one part of it and pulling another, for it draws one part away from itself and another part toward itself" (*Ph.* VII 2 244^{a}2–4). Hence all movements—rectilinear, circular, or a combination of the two—can be caused by *pneuma* (*DA* III 10 433^{b}25–26).

Initially *pneuma* is assigned a role in the transmission of form to uncontroversially animate beings. However, its role gets expanded to explain other phenomena, such as transparency:

> For it is not insofar as something is water or insofar as it is air that it is visible, but because there is a certain nature in it that is the same in both of them and in the [eternal] body above. (*DA* II 7 418^{b}7–9)
>
> What we call transparent is not something special to air, or water, or any other of the bodies usually called transparent, but is a common nature or potentiality present in these, and in all other bodies in a greater or lesser degree, and does not exist separately. (*Sens.* 3 439^{a}21–23)

Then, because *pneuma* is soul-transmitting, soul is to some extent itself attributed to anything in which *pneuma* is present: "in water *pneuma* is present, and in all *pneuma* there is soul-involving [= formative] heat (*thermotêta psuchikên*), so that in a way all things are full of soul" (*GA* III 11 762^{a}18–21). When "the capacity of all soul" is associated with "the nature in the *pneuma* that is analogous to the element that constitutes the stars," then, the point of analogy is that the nature in question is both transparent and—as itself in movement—an appropriate transmitter of soul and life. For the element that constitutes the stars, which is ether (*aithêr*) or primary body (*sôma prôton*), is a body "different from and additional to the elemental ones met with here, more divine than, and prior to, all of them" (*Cael.* I 2 269^{a}30–32), and is both transparent and in eternal circular movement (I 3 270^{a}12–^{b}25). Hence *pneuma* is a "body more divine than the so-called elements," because it is analogous to ether, which is in fact more divine than they.

The fact that soul is transmitted in this way has consequences for what a soul is. Female menses is a complex structure of potentialities to move in certain ways. As such, it is lifeless and soulless—unmoving. When the pneuma-imbued male seed enters it and causes ongoing movements within it, the resulting embryo acquires nutritive soul (*GA* II 3 736^{a}35–36). Hence the seed has the *capacity* to take in nourishment and grow when it is in a functioning female uterus where menses are available to it. And because it does Aristotle can define soul of every sort—whether nutritive or perceptive or rational—as "the first actualization (*entelecheia*) of a natural body that has life potentially" (*DA* II 1 412^{a}27–28) or, more expansively, as "the first actualization of a natural instrumental body" (412^{b}5–6). For a first potentiality is like the capacity someone has to learn Greek. When that capacity is actualized through the acquisition of the ability to speak Greek, that is its *first* actuality—the first stage in the actualization of the capacity. The acquired capacity he now has to exercise his acquired ability in actively speaking Greek is a second potentiality—a second stage in the development of the original first potentiality. Actualizing that second potentiality in actively speaking, in turn, is a *second* actualization (II 5 417^{a}21–29) or activity (*energeia*) (III 4 429^{b}6–7). Thus in a mature animal the potentiality for nourishment and growth is always possessed as a *first* actualization as long as the animal is alive. It is only in the seed from which it develops that nutritive soul is present as a *first* potential: "It is not what has lost its soul that is potentially such as to live, but what has it. The seed and the fruit are potentially bodies of this sort" (II 1 412^{b}26–27).

Pneuma is the vitalizing factor, the one that brings life and soul into the right sort of body, equipping it with the starting-points of the various life or soul functions. In the case of seed, the right sort of body is a natural one with parts that can serve as instruments of nourishment and growth. In the case of potentialities, such as the potentiality to walk, whose actualization requires feet as instruments, the natural instrumental body in which they can be present must obviously be of a different sort from seed. Similarly, to have sight as a first actualization, a body needs to have functional eyes. And what makes an eye functional, what makes it a living eye, is that it is vitalized by *pneuma*. For that to be possible, however, the eye must be part of the vitalized body of an autonomously functioning whole animal—one in whose blood *pneuma* reaches to all the various functional parts.

Hence it is not *pneuma* that is the instrumental body of perceptual soul but the right sort of pneumaticized body. That is why soul can also be defined as the "form of a natural body that has life potentially" (II 1 412^{a}19–21). If the life in question is simply vegetative life, the requisite type of body may be that of a seed, and its form, once it is planted and begins to grow, may be the structure of informing movements that code for nourishment and growth. If the life is that of perception, the requisite body must contain a structure of such movements that is correspondingly more complex.

Immortal Soul

To the account of soul as "form of a natural body that has life potentially," the understanding (*nous*) is an intriguing exception, since it is unique among the human soul's activities in having no sublunary bodily correlate: "bodily activity is in no way associated with its activity" (*GA* II 3 736^{b}28–29; also *DA* II 1 413^{a}6–7). The puzzle immediately arises of how what is without such a correlate can develop in a fetus as a result of movements in the *pneuma* contained in male seed:

> We must make clear whether that which is constituted in the female takes over anything from that which enters, or nothing; concerning soul, for example, in virtue of which it is called an animal. . . whether it is present within the seed and the fetus or not, and where it comes from. . . . It is plain enough that seed and fetus have nutritive soul. . . but as they develop they also have the perceptual soul in virtue of which they are animal. For they do not become simultaneously animal and man, or animal and horse, and so on; for the end is the last thing to be produced, and the end of each animal's coming to be is what is special to it. That is why, where understanding is concerned, it is a very great puzzle as to when and how and from where it is acquired by those who share this starting-point, and we must try hard to grasp its resolution according to our abilities and to the extent possible. (*GA* II 3 736^{a}27–^{b}8)

The reason it is such a puzzle is that the various psychological functions can be present as capacities or potentialities in seed or fetus in only a certain number of ways:

> [1] Either they must all be produced in the menses without existing there beforehand, or they must all preexist, or some

> must, but not others; and [2] they must be produced in the matter [that is, the menses] either without having entered in the male's seed, or having come from there; and [3] in the male they must either all be produced [in the seed] from outside it, or none from outside, or some but not others. That they cannot all be present beforehand is clear from the following. [4] All starting-points whose activity is bodily are clearly unable to be present without body (for example, walking without feet). [5] And hence they cannot enter [the seed] from outside. For they can neither enter by themselves, not being separate, nor enter in as the starting-points of an already formed body; for the seed is a residue produced by a change in the nutriment. [6] It remains then that understanding alone enters additionally from outside and alone is divine; for bodily activity is in no way associated with its activity. (*GA* II 3 736^{b}15–29)

Here [1] concerns the menses and what it contributes to the fetus; [2] concerns the seed and what it contributes; and [3] concerns the male progenitor and what he contributes to the seed. And the line of descent, as we know, is from formative movements in the *pneuma* contained in the male progenitor's blood to his seed, from seed to menses, and so to fetus. [4] restricts our attention to starting-points of psychological functions whose active varieties are bodily, in that they require bodily organs, as walking requires feet and seeing requires eyes. [5] tells us the two conditions under which these could enter something "from the outside." This signals, as [3] makes clear, that the something they enter is the male seed. [5] then shows that the starting-points cannot meet either of the conditions: they cannot enter by themselves, apart from body, because they are not separate from it; they cannot enter the body of the seed as the starting-points of an already formed body, because seed, as a residue produced by nutriment, does not contain things like feet and other bodily parts. On the other hand, [6] because bodily activity is in no way associated with the activity of understanding, understanding does enter the male seed from outside. That is the picture.

Just how understanding manages to enter the seed from outside, however, is left unexplained. All that we are told is that in embryogenesis it is transmitted along with the seed yet separate from it:

> Consider now the body of the seed, in and with which is emitted the starting-point of soul, part of which is separate from the body and belongs to those beings in which something divine is included (and this is what is called understanding), while the other is not separate from the body. (*GA* II 3 737^{a}7–11)

As a result of being transmitted in this way, however, the understanding "seems to be born in us as a sort of substance, and not to pass away" (*DA* I 4 408^{b}18–25) and to be "perhaps something divine" (408^{b}29). Moreover, it is "in substance an activity," and so is not "sometimes understanding and at other times not," but rather of all the elements in the human soul "it alone is immortal and eternal" (III 5 430^{a}18–23). These characteristics make it reasonable to suppose that understanding is transmitted along with the male seed as movements in *ether* that code for it. The following description of ether makes the supposition all but certain:

> It is reasonable to assume that ether is incapable of coming to be, passing away, and of growth or alteration, because everything that comes to be does so from a contrary and some underlying subject into a contrary by the action of a contrary, as we said in our initial accounts [in *Ph.* I 7–9]. The movements of contraries, however, are contraries. So if there cannot be a contrary to this body, because there cannot even be a movement contrary to movement in a circle, nature seems to have rightly exempted what was to be incapable of coming to be and passing away from contraries, since it is in contrary things that coming to be and passing away occur. Again, everything that grows does so as a result of something of the same kind being added to it and dissolving into matter. There is nothing, however, from which ether comes to be. Yet if it is non-growing and incapable of passing away, the same line of thought leads us to suppose that it is also unalterable. For alteration is change with respect to quality, and qualitative states and dispositions, such as health and disease, do not come to be without changes in affection. All natural [sublunary] bodies, however, that change with respect to an affection admit, we see, of growth and decrease. . . . Hence if the body that moves in a circle cannot admit of growth or decrease, it is reasonable to suppose that it is also unalterable. (*Cael.* I 3 270^{a}12–35)

Were understanding coded for by anything other than the circular movements in ether, then, it seems that it could not itself be immortal, eternal, or ever active.

Ether itself, to be sure, is a bit hard to get a handle on, since it seems, for one thing, to be a sort of perpetual motion machine—something that by its very essence cannot stop moving or run out of steam. At the same time, though, it is fairly clearly something material. Hence the understanding, which is coded for by its movements, while it can come apart from earth, water, air, and fire, cannot ever become wholly disembodied. Its entry into the male seed in embryogenesis, then, is not a case of a ghost entering a machine, but—to continue the metaphor—of one kind of machine entering another. This lessens the mystery that understanding seemed to present us with even if it does not dispel it altogether.

The Science of Soul

Because the science S to which *De Anima* is a contribution deals with souls—animators—in general, it deals also with the animators of plants, namely, nutritive soul (discussed in II 4). This marks one difference between S and what we call psychology—one way in which S is aligned more closely with biology or botany. Moreover, Aristotle himself acknowledges that S is a divided or bipartite science:

> There is a puzzle too about the affections of the soul, as to whether they are all also shared by what has the soul or whether there is also some affection that is special to the soul itself. For it is necessary to attain [a resolution of] this, but it is not easy. It appears that in most cases, though, the soul is neither affected by nor does it act without the body—for example, being angry, being confident, having an appetite for things, perceiving in general—whereas understanding seems to be most of all special to the soul. . . . The affections of the soul—spiritedness, mild-mannerdness, fear, pity, confidence, and, further, joy, loving, and hating—would all seem to involve the body, since at the same time as these the body is affected in a certain way. . . . If this is so, however, it is clear that the affections of the soul are enmattered accounts. So their definitions will be of this sort, for example: "Being angry is a sort of movement of such-and-such a sort of body, or of a part or a capacity, as a result of something for the sake of that." And this is why it already belongs to the natural scientist to get a theoretical grasp on the soul, either all soul or this sort of soul. (*DA* I 1 403^{a}3–28; also *Met.* VI 1 1025^{b}25–1026^{a}30)

Thus on the one hand S deals with affections of the soul that involve the body in the way indicated and on the other it deals with other attributes of the soul—if there are any—that do not involve it. These, if actually separable from the body—the body ultimately composed of earth, water, air, and fire—are the provenance not of natural science but of primary philosophy (*DA* 403^{b}15–16).

What, then, is primary philosophy or primary science? The following passages tell us in no uncertain terms:

> Natural science is concerned with things inseparable but not immovable, while certain parts of mathematics are concerned with things immovable and not separable but as in matter. The primary science, by contrast, is concerned with things that are both separable and immovable. Now all causes are necessarily eternal, and these most of all. For they are the causes of the divine beings that are perceptible. There must, then, be three theoretical philosophies, mathematical, natural, and theological, since it is quite clear that if the divine belongs anywhere, it belongs in a nature of this sort. (*Met.* VI 1 1026^{a}13–19)

> Natural science is concerned with things that have a starting-point of movement within themselves. Mathematics, on the other hand, is theoretical and is a science of things that remain the same, but they are not separable. Concerned with things that are separable, therefore, and immovable, there is a science distinct from both of these, if indeed there is some substance of that sort (I mean separable and immovable), which is just what we shall try to show. And if indeed there is a nature of this sort among beings, there is where the divine too would surely be, and this would be the primary and most controlling starting-point. Accordingly, it is clear that there are three kinds (*genos*) of theoretical sciences—natural, mathematical, and theological. (*Met.* XI 7 1064^{a}30–^{b}3)

Thus the science that deals with the separable affections of soul—if any—is theology. But that there are such affections, though conditional in the passages we are now looking at, is something we already know Aristotle takes to be a fact, since with the activity of the understanding "bodily activity is in no way associated" (*GA* II 3 736^{b}28–29). Moreover that these affections should belong to the understanding and be the provenance of theology is no real surprise, either, since "the understanding is something divine" (*NE* X 7 1177^{b}30).

Turn back to S—Aristotle's science of soul. S has its feet in botany and its head in theology. And while the feet disconnect it from psychology, the head connects it to religious conceptions of the soul as something that can survive the death of the body—an idea Aristotle himself countenances:

> The understanding, on the other hand, seems to be born in us as a sort of substance, and not to pass away. For if it could pass

> away it would most of all be due to the feebleness of old age, whereas, as things stand, it is like what happens in the case of the perceptual organs. For if an old man could get such-and-such a sort of eye, he would see as well as even a young one. So old age is not due to the soul's being affected in a certain way but, rather, what the soul is in, as in the case of drunkenness and disease. And in particular understanding and contemplating are extinguished because something else within passes away, but the understanding itself is unaffectable. But thinking and loving or hating are not affections of the understanding but of what has it, insofar as it has it. That is why when that passes away it neither remembers nor loves. For they were not affections of it, but of what is common, which has passed away. But the understanding is perhaps something divine and is unaffectable. (*DA* I 4 408^{b}18–25)

But just as understanding enters the developing fetus not as a ghost entering a machine but as ether moving in ways that code for it, so, at the death of the body composed of earth, water, fire, and air, it presumably exits in the same way. Death does not, then, herald the absolute disembodiment of the understanding, just its loss of one sort of body—the sort that makes the soul also a suitable subject for a natural science.

What a Human Being Is

An *anthrôpos* in the most general sense is a human being of either sex, whereas an *anêr*, by contrast, is specifically a male human being—a man. The associated adjective *anthrôpinos*, while it can certainly mean "human," often seems to mean something more like "*merely* human":

> We should not, however, in accord with the makers of proverbs, "think human things (*anthrôpina*), since you are human" or "think mortal things, since you are mortal" but, rather, we should as far as possible immortalize, and do everything to live in accord with the element in us that is most excellent. (*NE* X 7 1177^{b}31–33)

Anthrôpikos (also "human") sometimes has similar connotations:

> Happiest, but in a secondary way, is the life in accord with the other virtue, since the activities in accord with it are human (*anthrôpikai*). . . . Indeed, some of them even seem to arise

> from the body. . . . But the virtues of the composite [of soul and body] are human (*anthrôpikai*). So too, then, are both the life and the happiness that is in accord with them. The virtue of understanding [= theoretical wisdom], though, is separated. (*NE* X 8 1178^{a}9–22)

Indeed, even *anthrôpos* itself is sometimes used to refer to the whole human animal, sometimes to the human element in human beings by contrast with the divine one:

> But such a [contemplative] life would be more excellent than one in accord with the human element (*anthrôpon*), since it is not insofar as he is a human being (*anthrôpos*) that someone will live a life like that but insofar as he has some divine element (*theion ti*) in him, and to the degree that this element is superior to the composite, to that degree will its activity also be superior to that in accord with the other sort of virtue. (*NE* X 7 1177^{b}26–29)

But *anthrôpos* is equally well used to refer to that divine element, since it is what makes human beings distinctively human:

> Of those pleasures that seem to be decent, however, which sort or which particular one should we say is characteristic of a human being? Or isn't this clear from the corresponding activities, since the pleasures are entailed by these? So whether the activities of a complete and blessed man are one or more than one, the pleasures that complete these will be said to be characteristically human (*anthrôpou*) pleasures in the full sense, and the rest will be so in a secondary or many-times-removed way, as are the activities. (*NE* X 5 1176^{a}24–29)

Here the pleasures that are characteristically human are those not of the body, since many of these we share with wild beasts, but of the soul, especially the understanding:

> We think that pleasure must be mixed in with happiness, and the most pleasant of the activities in accord with virtue is agreed to be the one in accord with theoretical wisdom. (*NE* X 7 1177^{a}22–25)

Thus when we ask what a human being is, we need to be clear about what the target of our question is.

It is at this point that we come face to face with an initially quite puzzling doctrine:

> [1] But just as a city too or any other complex system, seems to be most of all (*malist'*) its most controlling part, so also does a human being. (*NE* IX 8 1168^b31–33)

> [2] It would seem too that each person actually *is* this, if indeed it is the controlling and better element. So it would be strange if he were to choose not his own life but that of something else. Moreover, what we said before will fit now as well. For what properly belongs to each thing by nature is best and most pleasant for each of them. For each human being, then, the life in accord with understanding is so too, if indeed this most of all is a human being. Hence, this life will also be happiest. (*NE* X 7 1178^a2–8; also *Protr.* B58–70)

[1] tells us that a human being is *malista* ("most of all") its most controlling element, which [2] identifies with the divine element in him—understanding. Moreover [2] goes further in one dimension, since it drops the adverb *malista*, and speaks of a human being simply as being—as being one and the same as—his understanding. At the same time, it is more tentative about this identity—"if indeed it is the controlling and better element"—and in the end restores the adverb: "if indeed this most of all is a human being."

Now it is certainly true that we cannot make much sense of one thing being most of all one and the same as another if this means that it has a very high degree, or the highest degree, of numerical identity to it. For numerical identity, like existence, does not come in degrees; things either exist or they don't and are either one and the same as each other or they aren't. However, the fact that [1] mentions a city as an example of the sort of complex system that is most of all its most controlling element gives us a way to understand it in more familiar and less apparently paradoxical terms.

In *Politics* III 6, Aristotle squarely states that "the governing body controls the city everywhere, and the constitution is the governing body" (1278^b10–11). What is revealing about this statement is that, like [1–2], it mentions the notion of control, which is itself characterized in terms of degree: "most controlling" in [1] and "controls the city everywhere (*pantachou*)." And the reason it is revealing is this:

> [3] A person is called "self-controlled" or "lacking in self-control" depending on whether or not his understanding is in

> control, on the supposition that this is what each person *is*, and it is actions involving reason that people seem most of all to do themselves and to do voluntarily. So it is clear enough that this part is what each person is or is most of all and that a decent person likes this part most. (*NE* X 8 1168^b34–1169^a2)
>
> [4] Just as in the whole it is the [primary] god, so it is too in us. For the divine constituent in us [= understanding or reason] in a way does all the moving. Of reason, however, the starting-point is not reason, but something superior. But what besides the [primary] god is superior to both scientific knowledge and understanding, since virtue [of character] is an instrument of understanding? (*EE* VIII 2 1248^a25–29)

Without going into all the details involved in interpreting [4], we can see that together with [3] it licenses us to understand [1–2] as a doctrine that is as much about control as it is about identity.

When contemporary philosophers try to understand human agency, they often find themselves wanting to distinguish actions that originate in—or have their causal source in—the agent from actions that stem from the agent's "real self" or "will" or what the agent "identifies" with. A reforming smoker, for example, may succumb to temptation and exhibit lack of self-control by smoking a cigarette, without thereby returning to being a smoker. Why? Because that action stems from a desire that is no longer a part of his true self, no longer part of his will or what he identifies with. However precisely we are best to understand the psychology of agency that makes these distinctions fully intelligible, it is attractive to see Aristotle as making an early contribution to it, since this allows us to make good sense of [1–2]. For on this way of looking at things degrees of identity have no place in them. We are most of all our understanding because our understanding is our "true self"—the source of those actions that are most our own, that we most identify with. Our psychology, then, is in one way that of our understanding, in another that of the complex human being of which it is a part, and in another still that of the essentially embodied soul that to a certain extent we share with plants and animals.

Aristotelian Sciences

We have spoken of S as a "science" of soul and seen that it divides into two parts—one natural, the other theological. To have a handy way to refer to these, let us call one *natural psychology*, the other *theological psychology*, and the two collectively simply *psychology*. The question we must now address is what exactly it means to say that these things are sciences.

When science receives its focused discussion in the *Nicomachean Ethics*, Aristotle is explicit that if we are "to speak in an exact way and not be guided by mere similarities" (VI 3 1139^{b}19), we should not call anything a science unless it deals with eternal, entirely exceptionless facts about universals that are wholly necessary and do not at all admit of being otherwise (1139^{b}20–21). Since he is here explicitly epitomizing his more detailed discussion of science in the *Posterior Analytics* (1139^{b}27), we should take the latter too as primarily a discussion of science in the exact sense, which it calls *epistêmê haplôs*—unconditional scientific knowledge. It follows—and we should acknowledge this—that only the strictly theoretical sciences are sciences in the exact sense. Hence even if theological psychology is such a science, natural psychology is not one, and so psychology as a whole is not one either.

Having said that, however, we must also register the fact that Aristotle himself mostly does not speak in the exact way but instead persistently refers to bodies of knowledge other than the strictly theoretical sciences as *epistêmai*. His usual division of the *epistêmai* into theological, mathematical, and natural is a dramatic case in point. But so too is his use of the term *epistêmê*, for example within the *De Anima*, where we first encounter it in the shape of the *natural* scientist (I 1 403^{a}28). Even boxing and wrestling are *epistêmai* (*Cat.* 10^{b}3–4).

The interesting question, therefore, is not whether psychology is a science, since the answer to that is obvious: it is not a science if we are being absolutely exact about the matter, but it is a science if we allow ourselves to be guided by the similarities between it and the strictly theoretical sciences—or by Aristotle's own general use of the term *epistêmê*, on the assumption that he himself was guided by these. The interesting question is, what are these similarities? Just how like a canonical or theoretical science is psychology?

An Aristotelian science of any sort (*DA* II 1 412^{a}10n), including a theoretical one, is a state of the soul, not a body of propositions in a textbook—although the state does involve having an affirmational grasp on a set of true propositions (*NE* VI 3 1139^{b}14–16). Some of these propositions are indemonstrable starting-points, which are or are expressed in definitions, and others are theorems demonstrable from these starting-points. We can have scientific knowledge only of the theorems, since—exactly speaking—"what is scientifically known is demonstrable" (*NE* 6 1140^{b}35). Yet—in what is clearly another lapse from exact speaking—Aristotle characterizes "the most exact of the sciences," which is theoretical wisdom (*sophia*), as also involving a grasp by understanding (*nous*) of the truth where the starting-points themselves are concerned (*NE* 7 1141^{a}16–18). He does the same thing in the *Metaphysics*, where theoretical wisdom is the *epistêmê* that provides "a theoretical grasp on the primary starting-points and causes"—among which are included "the good or the for-the-sake-of-which" (*NE* I 2 982^{b}7–10). Indeed, the grasp we have of such starting-points must result in their being "better known" than the theorems we demonstrate from them if we are to have any scientific knowledge of the exact sort at all (*NE* VI 3 1139^{b}34).

How like that is psychology? Are there starting-points here too and theorems demonstrable from them? We might think this is an easy question to answer. After all, *De Anima* seems not to include any demonstrations whatsoever. For a demonstration is, among other things, a deductively valid argument that is syllogistic in form, and deductions of any sort are scarcely to be found in it. This is also a problem with the vast majority of Aristotle's works, even those that are usually classed as "scientific treatises"—for example, *Meteorology* and *Parts of Animals*. For none of them seems to fit the description of a science as developed in the *Posterior Analytics*. People have certainly tried to find elements of demonstration and axiomatic structure in these treatises, but the results are somewhat underwhelming. In large part, this is because the search is misconceived from the outset.

If we think of a science in the exact sense as consisting exclusively of what is demonstrable, as we have seen that Aristotle himself sometimes does, we will be right to conclude that a treatise without demonstrations in it cannot be scientific. But if, as he also does, we include knowledge of starting-points as parts of science, we will not be right, since a treatise could contribute to a science not by demonstrating anything but by arguing to the starting-points themselves—an enterprise that could not possibly consist of demonstrations from those starting-points, since these would be circular. Arguments leading *from* starting-points and arguments leading *to* starting-points are different (*NE* I 4 1095^{a}30–32), we are invited not to forget, just as we are told that soul is a starting-point of living things (*DA* I 1 402^{a}5–6), that a major goal of the *De Anima* is "to get a theoretical grasp on, and to know, both the nature of the soul and its substance, and then on all the coincidents belonging to it" (402^{a}7–8). We might reasonably infer, then, that *De Anima* contributes to psychology precisely by developing the correct definition of its starting-points, without which no demonstrative science of it can exist. The same idea might be employed in the case of many of Aristotle's other treatises. They too, we might suppose, are scientific in just this sense.

Dialectic, Induction, and Scientific Starting-Points

In our investigation of starting-points, "we must," Aristotle says, "start from things known *to us*" (*NE* I 4 1095^{b}3–4). For the sake of clarity, let us call these *raw starting-points*. These are the ones we start from when we are arguing to *explanatory scientific starting-points*. It is important not to confuse the two. In the case of the various special sciences the *explanatory starting-points* include, in particular, definitions that specify the genus and differentiae of the real (as opposed to nominal) universal essences of the beings with which the science deals (*APo.* II 10 93^b29–94^a19). Since scientific definitions must be apt starting-points of demonstrations, this implies, Aristotle thinks, that the "extremes and the middle terms must come from the same genus" (I 7 75^b10–11). As a result a single canonical science must deal with a single genus (I 28 87^a38–39).

To reach these definitions from raw starting-points, however, we first have to have the raw starting-points ready to hand. Aristotle is clear about this, as he is indeed about what is supposed to happen next:

> The method (*hodos*) is the same in all cases, in philosophy as well as in the crafts or any sort of learning whatsoever. For one must observe for both terms what belongs to them and what they belong to, and be supplied with as many of these terms as possible, and one must investigate them by means of the three terms [in a syllogism], in one way when refuting, in another way when establishing something. When it is in accord with truth, it must be from the terms that are catalogued (*diagegramenôn*) as truly belonging, but in dialectical deductions it must be from premises that are in accord with [reputable] belief. . . . Most of the starting-points, however, are special to each science. That is why experience must provide us with the starting-points where each is concerned—I mean, for example, that experience in astronomy must do so in the case of astronomical science. For when the appearances had been adequately grasped, the demonstrations in astronomy were found in the way we described. And it is the same way where any other craft or science whatsoever is concerned. Hence if what belongs to each thing has been grasped, at that point we can readily exhibit the demonstrations. For if nothing that truly belongs to the relevant things has been omitted from the collection, then concerning everything, if a demonstration of it exists we will be able to find it and give the demonstration, and if it is by nature indemonstrable, we will be able to make that evident. (*APr.* I 30 46^a3–27)

Once we have a catalogue of the *raw starting-points*, then, the demonstrative explanation of them from explanatory scientific starting-points is supposedly fairly routine. We should not, however, demand "the cause [or explanation] in all cases alike. Rather, in some it will be adequate if the fact that they are so has been correctly shown (*deiknunai*) as it is indeed where starting-points are concerned" (*NE* I 8 1098^{a}33–^{b}2). But what exactly is it to show a starting-point correctly or adequately?

In the following text Aristotle provides one possible answer:

> Dialectic is useful in the philosophical sciences because the capacity to go through the puzzles on both sides of a question will make it easier to discern what is true and what is false in each. Furthermore, dialectic is useful in relation to the primary [starting-points] (*ta prota*) in each science. For it is impossible to say anything about these based on the starting points properly belonging to the science in question, since these starting-points are, of all of them, the primary ones, and it is through reputable beliefs (*endoxa*) about each that it is necessary to discuss them. This, though, is a task special to, or most characteristic of, dialectic. For because of its ability to examine (*exetastikê*), it has a route toward the starting-points of all methods of inquiry. (*Top.* I 2 101^{a}34–^{b}4)

And this is repeated almost word for word in the *Physics* with reference to the concept of place, which is a natural scientific starting-point:

> We must try to make our investigation in such a way that the what-it-is is given an account of, so that the puzzles are resolved, the things that are believed to belong to place will in fact belong to it, and furthermore, so that the cause of the difficulty and of the puzzles concerning it will be evident, since this is the best way of showing each thing. (IV 4 211^{a}7–11)

Prima facie, then, the *De Anima* should correctly show the explanatory starting-points of the science of psychology (natural and theological) going through puzzles and solving these by appeal to reputable beliefs. But before we rush to the *De Anima* to see whether that is what we do find, we need to be clearer about what exactly we should be looking for.

Dialectic is recognizably a descendant of the Socratic elenchus, which famously begins with a question like this: *Ti esti to kalon?* What is the noble? The respondent, sometimes after a bit of nudging, comes up with a universal definition, what is noble is what all the gods love, or whatever it might be (I adapt a well-known answer from Plato's *Euthyphro*). Socrates then puts this definition to the test by drawing attention to some things that seem true to the respondent himself but which conflict with his definition. The puzzle or *aporia* that results from this conflict then remains for the respondent to try to solve, usually by reformulating or rejecting his definition. Aristotle understood this process in terms that show its relationship to his own:

> Socrates, on the other hand, busied himself about the virtues of character, and in connection with them was the first to inquire about universal definition. . . . It was reasonable, though, that Socrates was inquiring about the what-it-is. For he was inquiring in order to deduce, and the what-it-is is a starting-point of deductions. For at that time there was not yet the strength in dialectic that enables people, and separately from the what-it-is, to investigate contraries, and whether the same science is a science of contraries. For there are two things that may be fairly ascribed to Socrates—inductive arguments and universal definition, both of which are concerned with a starting-point of scientific knowledge. (*Met.* XIII 4 1078^{b}17–30; also I 6 987^{b}1–4)

In Plato too dialectic is primarily concerned with scientific starting-points, such as those of mathematics, and seems to consist in some sort of elenchus-like process of reformulating definitions in the face of conflicting evidence so as to render them puzzle free (*Rep.* VII 532a1–533d1). Aristotle can reasonably be seen, then, as continuing a line of thought about dialectic, while contributing greatly to its exploration, systemization, and elaboration in works such as *Topics* and *Sophistical Refutations*.

Consider now the respondent's first answer, his first definition: what is noble is what the gods love. Although it is soon shown to be incorrect, there is something quite remarkable about its very existence. Through experience shaped by acculturation and habituation involving the learning of a natural language, the respondent is confident that he can say what nobility is. He has learned to apply the word "noble" to particular people, actions, and so on correctly enough to pass muster as knowing its meaning, knowing how to use it. From these particular cases he has reached a putative universal, something the particular cases have in common. But when he tries to define that universal in words, he gets it wrong, as Socrates shows. Here is Aristotle registering the significance of this:

> The things that are knowable and primary for particular groups of people are often only slightly knowable and have little or nothing of the being in them. Nonetheless, beginning from things that are poorly known but known to ourselves, we must try to know the ones that are wholly knowable, proceeding, as has just been said, through the former. (*Met.* VII 3 1029^{b}8–12)

The route by which the respondent reaches the universal that he is unable to define correctly is what Aristotle calls induction (*epagôgê*). This begins with (1) perception of particulars, which leads to (2) retention of perceptual contents in memory, and, when many such contents have been retained, to (3) an experience, so that for the first time "there is a universal in the soul" (*APo.* II 19 100^{a}3–16). The universal reached at stage (3), which is the one the respondent reaches, is described as "indefinite" and "better known by perception" (*Ph.* I 1 184^{a}22–25). It is the sort of universal, often quite complex, that constitutes a nominal essence corresponding to the nominal definition or meaning of a general term. Finally, (4) from experience come craft knowledge and scientific knowledge, when "from many intelligible objects arising from experience one universal supposition about similar objects is produced" (*Met.* I 1 981^{a}5–7).

The nominal (or analytic, meaning-based) definition of the general term "thunder," for example, might pick out the universal *loud noise in the clouds.* When science investigates the things that have this nominal essence, it may find that they also have a real essence or nature in terms of which their other features can be scientifically explained:

> Since a definition is said to be an account of what something is, it is evident that one sort will be an account of what its name, or some other name-like account, signifies—for example, what triangle signifies. . . . Another sort of definition is an account that makes clear why it exists. So the former sort signifies something but does not show it, whereas the latter will evidently be like a demonstration of what it is, differing in arrangement from a demonstration. For there is a difference between saying why it thunders and saying what thunder is. In the first case you will say: because fire is being extinguished in the clouds. And what is thunder? The loud noise of fire being extinguished in the clouds. Hence the same account is given in different ways. In one way it is a continuous demonstration, in the other a definition. Further, a definition of thunder is a noise in the clouds, and this is a conclusion of the demonstration of what it is. The definition of an immediate item, though, is an indemonstrable positing (*thesis*) of what it is. (*APo.* II 10 93^{b}29–94^{a}10; compare *DA* II 2 413^{a}13–20)

A real (or synthetic, fact-based) definition, which analyzes this real essence into its "elements and starting-points" (*Ph.* I 1 184^{a}23), which will be definable but indemonstrable within the science, makes intrinsically clear what the nominal definition made clear only to us by enabling us to recognize instances of thunder in a fairly—but imperfectly—reliably way. As a result, thunder itself, now clearly a natural and not just a conventional kind, becomes better known not just to us but entirely or unconditionally. These analyzed universals, which are the sort reached at stage (4), are the ones suited to serve as starting-points of the sciences and crafts: "experienced people know the that but do not know the why, whereas craftsmen know the why, that is, the cause" (*Met.* I 1 981ᵃ28–30).

Socrates too, we see, wanted definitions that were not just empirically adequate but also explanatory: in telling Euthyphro what he wants in the case of piety, he says that he is seeking "the form itself *in virtue of which* all the pieties are pieties" (*Euthphr.* 6d10–11). That is why he rejects the definition of piety as being what all the gods love. This definition is in one way correct, presumably, in that if something is pious it is necessarily loved by the gods and vice versa, but it isn't explanatory, since it doesn't tell us what it is about pious things that makes all the gods love them, and so does not identify the form in virtue of which they are pious (9e–11b).

Let us go back. We wanted to know what was involved in showing a scientific starting-point. We were told how we could *not* do this, namely, by demonstrating it from scientific starting-points. Next we learned that dialectic had a route to it from reputable beliefs. At the same time, we were told that induction had a route to it as well—something the *Nicomachean Ethics* also tells us: "we get a theoretical grasp of some starting-points through induction, some through perception, some through some sort of habituation, and others through other means" (I 7 1098ᵇ3–4). This suggests that induction and dialectic are in some way or other the same process.

What shows a Socratic respondent to be wrong is an example that his definition does not fit. The presentation of the example might be quite indirect, however. It might take quite a bit of stage setting, elicited by the asking of many questions, to bring out a puzzle. But if it does succeed in doing so, it shows that the universal grasped by the respondent and the definition of it produced by him are not entirely or unconditionally knowable and that his state is not one of clear-eyed understanding:

> A puzzle in thought makes manifest a knot in the subject matter. For insofar as thought is puzzled it is like people who are tied up, since in both cases it is impossible to move forward. That is why we must get a theoretical grasp on all the difficulties beforehand, both for these reasons and because those who inquire without first going through the puzzles are like people who do not know where they have to go. And, in addition, a person [who has not already grasped the puzzles] does not even know whether he has found what he is inquiring into. For to

> someone like that the end is not clear, whereas to a person who has already grasped the puzzles it is clear. (*Met.* II 1 995^{a}30–^{b}2)

But lack of such clear-eyed understanding of a scientific starting-point has serious downstream consequences:

> If we are to have scientific knowledge through demonstration,. . . we must know the starting-points better and be better convinced of them than of what is being shown, but we must also not find anything more convincing or better known among things opposed to the starting-points from which a contrary mistaken conclusion may be deduced, since someone who has unconditional scientific knowledge must be incapable of being persuaded out of it. (*APo.* I 2 72^{a}37–^{b}4)

If dialectical examination brings to light a puzzle in a respondent's thought about a scientific starting-point, then, he cannot have any unconditional scientific knowledge even of what he may well be able to demonstrate correctly from it. Contrariwise, if dialectical examination brings to light no such puzzle, he apparently does have clear-eyed understanding, and his route to what he can demonstrate is free of obstacles.

At the heart of dialectic, as Aristotle understands it, is the dialectical deduction (*dialektikos sullogismos*). This is the argument lying behind the questioner's questions, partly dictating their order and content and partly determining the strategy of his examination. In the following passage it is defined and contrasted with two relevant others:

> Dialectical arguments are those that deduce from reputable beliefs in a way that reaches a contradiction; peirastic arguments are those that deduce from those beliefs of the respondent that anyone must know (*eidenai*) who pretends to possess scientific knowledge. . . ; contentious (*eristikos*) arguments are those that deduce or appear to deduce from what appear to be reputable beliefs but are not really such. (*SE* 2 165^{b}3–8)

If we think of dialectical deductions in this way, a dialectician, in contrast to a contender, is an honest questioner, appealing to genuinely reputable beliefs and employing valid deductions. "Contenders and sophists use the same arguments," Aristotle says, "but not to achieve the same goal. . . . If the goal is apparent victory, the argument is contentious; if it is apparent wisdom, sophistic" (11 171^{b}27–29). Nonetheless, he does also use the term *dialektikê* as the name for the craft that honest dialecticians and sophists both use: “In dialectic a sophist is so called in virtue of his deliberate choice, and a dialectician is so called not in virtue of his deliberate choice, but in virtue of the capacity he has” (*Rh.* I 1 $1355^{b}20$–21). If dialectic is understood in this way, a dialectician who deliberately chooses to employ contentious arguments is a sophist (I 1 $1355^{a}24$–$^{b}7$).* We need to be careful, therefore, to distinguish *honest dialectic* from what we may call *plain dialectic*, which—like all crafts—can be used for good or ill (*NE* V 1 $1129^{a}13$–17).

The canonical occasion for the practice of the Socratic elenchus, obviously, is the examination of someone else. But there is nothing to prevent a person from practicing it on himself: “How could you think,” Socrates asks Critias, “that I would refute you for any reason other than the one for which I would refute myself, fearing lest I might inadvertently think I know something when I don’t know it?” (*Chrm.* 166c7–d2). Dialectic is no different in this regard:

> But the philosopher, who is investigating by himself, does not care whether, though the things through which his deduction proceeds are true and knowable, the answerer does not concede them, because they are close to what was proposed at the start, and he foresees what is going to result, but rather is presumably eager for his claims to be as knowable and as close to it as possible. For it is from things of this sort that scientific deductions proceed. (*Top.* VIII 1 $155^{b}10$–16)

What we are to imagine, then, is that the philosopher surveys the raw scientific starting-points, constructing detailed catalogues of these. He then tries to formulate definitions of the various universals involved in them that seem to be candidate scientific starting-points, testing these against the raw scientific starting-points by trying to construct demonstrations from them. But these definitions will often be no more than partial: the philosopher is only on his way to complete definitional starting-points, just as the demonstrations will often be no more than proto or nascent demonstrations. The often rudimentary demonstrations that we find in Aristotle’s scientific treatises are surely parts of this process of arguing *to* not *from* starting-points. We argue to these in part by seeing whether or to what extent we could demonstrate from them.

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*Compare: “There are some things that cannot be put in only one genus—for example, the cheat and the slanderer. For neither the one with the deliberate choice to do it but without the capacity, nor the one with the capacity but not the deliberate choice, is a slanderer or a cheat, but rather the one with both” (*Top.* IV 5 $126^{b}8$–11).

So: First, we have the important distinction between dialectic proper, which includes the use of what appear to be deductions from what appear to be reputable beliefs, and honest dialectic, which uses only genuine deductions from genuine reputable beliefs. Second, we have the equally important distinction between the use of dialectic in examining a potentially hostile respondent and its use by the philosopher in a perhaps private pursuit of the truth. Third, we have an important contrast between honest dialectical premises and philosophical ones or scientific ones: honest dialectical premises are reputable beliefs; philosophical and scientific premises must be true and knowable. Fourth, we have two apparently equivalent routes to scientific starting-points, one inductive, which starts from *raw starting-points*, and the other dialectic, which starts from reputable beliefs.

According to the official definition, reputable beliefs are "things that are believed by everyone, by the majority, or by the wise—either by all of them, or by most, or by the most well known and most reputable" (*Top.* I 1 100^{b}21–23). Just as the scientist should have a catalogue of scientific truths ready to hand from which to select the premises of his demonstrations, so a dialectician ought also to select premises "from arguments that have been written down and produce catalogues (*diagraphas*) of them concerning each kind of subject, putting them under separate headings—for example, 'Concerned with good,' 'Concerned with life'" (*Top.* I 14 105^{b}12–15).

Clearly, then, there will be considerable overlap between the scientist's catalogue of raw starting-points and the honest dialectician's catalogue of reputable beliefs. For, first, things that are believed by reputably wise people are themselves reputable beliefs, and, second, any respondent would accept "the beliefs of those who have investigated the subjects in question—for example, on a question of medicine he will agree with a doctor, and on a question of geometry with a geometer" (*Top.* I 10 104^{a}8–37). The catalogues also differ, however, in that not all reputable beliefs need be true. If a proposition is a reputable belief, if it would be accepted by all or most people, it is everything an honest dialectician could ask for in a premise, since his goal is simply this: to show by honest deductions that a definition offered by any respondent whatsoever conflicts—if it does—with other beliefs the respondent has. That is why having a complete or fairly complete catalogue of reputable beliefs is such an important resource for a dialectician. It is because dialectic deals with things only "in relation to belief," then, and not as philosophy and science do, "in relation to truth" (I 14 105^{b}30–31) that it needs nothing more than reputable *beliefs*.

Nonetheless, the fact that all or most people believe something leads us "to trust it as something in accord with experience" (*Div. Somn.* 1 426^{b}14–16), and—since human beings "are naturally adequate as regards the truth and for the most part happen upon it" (*Rh.* I 1 1355^{a}15–17)—as containing some truth. That is why, having catalogued some of the things that people believe happiness to be, Aristotle writes: "Some of these views are held by many and are of long standing, while others are held by a few reputable men. And it is not reasonable to suppose that either group is entirely wrong, but rather that they are right on one point at least or even on most of them" (*NE* I 8 1098^{b}27–29). Later he generalizes the claim: "things that seem to be so to everyone, these, we say, *are*" (X 2 1172^{b}36–1173^{a}1). Raw starting-points are just that—raw. But when refined some shred of truth is likely to be found in them. So likely, indeed, that if none is found, this will itself be a surprising fact needing to be explained: "when a reasonable explanation is given of why an untrue view appears true, this makes us more convinced of the true view" (VII 14 1154^{a}24–25). It is the grain of truth enclosed in a reputable belief that a philosopher or scientist is interested in, then, not in the general acceptability of the surrounding husk, much of which he may discard.

The process of refinement in the case of a candidate explanatory starting-point is that of testing a definition of it against reputable beliefs. This may result in the definition being accepted as it stands or in its being altered or modified: when a definition is non-perspicuous, Aristotle tells us at *Top.* VI 13 151^{b}7–8, it must be "corrected and reconfigured (*sundiorthôsanta kai suschêmatisanta*)," until it is made clear. The same process applies to the reputable beliefs themselves, since they may conflict not only with the definition but also with each other. Again, this may result in their being modified, often by uncovering ambiguities within them or in the argument supporting them, or by drawing distinctions that uncover complexities in these, or they may be rejected entirely, provided that their appearance of truth is explained away.

The canonical occasion for the use of honest dialectic, as of the Socratic elenchus and plain dialectic, is the examination of a respondent. The relevant premises for the questioner to use, therefore, are the reputable beliefs in his catalogue that his respondent will accept. Just how wide this set of beliefs is in a given case depends naturally on how accessible to untrained respondents the subject matter is on which he is being examined. We may all have some beliefs about thunder and other phenomena readily perceptible to everyone and which are—for that very reason—reputable. But about fundamental explanatory notions in an esoteric science we may have none at all.

When a scientist is investigating by himself the class of premises he will select from is the catalogue of *all* the raw starting-points of his science, despite a natural human inclination to do otherwise:

> Yet . . . people seem to inquire up to a certain point, but not as far as it is possible to take the puzzle. It is what we are all inclined to do, to make our inquiry not with an eye to the thing itself but with an eye to the person who says things that contradict him.

> For even a person inquiring on his own continues up to the point at which he is no longer able to contradict himself. That is why a person who is going to inquire correctly should be able to raise objections to a position by using objections that are special to the relevant genus, and this will be when he has acquired a theoretical grasp of all the differentiae. (*Cael.* II 13 294^{b}6–13)

Hence a scientist will want to err on the side of excess, adding any reputable belief that appears to have any relevance whatsoever to his catalogue. When he formulates definitions of candidate scientific starting-points from which he thinks he can demonstrate the raw ones, he must then examine himself to see whether he really does have the scientific knowledge of it that he thinks he does. If he is investigating together with fellow scientists, others may examine him: we all do better with the aid of co-workers (*NE* X 7 1177^{a}34). What he is doing is using honest dialectic on himself or having it used on him. But this, we see, is little different from the final stage—stage (4)—of the induction we looked at earlier. Induction, as we might put it, is in its final stage (possibly self-directed) honest dialectic.

In a famous and much debated passage, Aristotle writes:

> We must, as in the other cases, set out the things that appear to be so, and first go through the puzzles, and, in that way, show preferably all the reputable beliefs about these ways of being affected, or, if not all of them, then most of them and the ones with the most authority. For if the objections are resolved and the reputable beliefs are left standing, that would be an adequate showing. (*NE* VII 1 1145^{b}2–7)

The specific topic of the comment is "these ways of being affected," which are self-control and its lack as well as resilience and softness. Some people think that it applies only to this topic and should not be generalized, even though "as in the other cases" surely suggests a wider scope. And, as we can now see that scope is in fact entirely general, since it describes the honest dialectical or inductive route to the starting-points of *all* the sciences and methods of inquiry, with *tithenai ta phainomena* ("setting out the things that appear to be so") describing the initial phase in which the raw starting-points are collected and catalogued.

Earlier we asked whether the *De Anima* took a route like this to the starting-points of psychology. Now that we know what exactly it is we are asking, we are in a better position to see what the answer is, but also to see that it is yes.

De Anima

Book I

I 1

402a1 Supposing that knowing to be a noble and an estimable thing, and one sort more so than another either in virtue of its exactness or by being about better and more wondrous things.[1] On both these grounds we may quite reasonably place the study of soul in the first rank. It seems too that to truth as a whole, knowledge of the soul makes a great contribution, especially with respect to nature, since the soul is as it were a starting-point of living things.[2]

And we are inquiring to get a theoretical grasp on, and to know, both the nature of the soul and its substance, and then on all the coincidents belonging to it—some of which seem to be special attributes of the soul, whereas others seem to belong because of it to living things as well.[3]

But in every way and altogether it is most difficult to attain any conviction concerning it. For, since the inquiry is also common to many other things, I mean the one about the substance and the what-it-is, it might perhaps seem to someone that a single method of inquiry is appropriate where all the things whose substance we wish to know are concerned, just as there is in fact demonstration of the coincidental special attributes, so that we should inquire [using] this method of inquiry.[4] If, however, there is no single and common method of inquiry concerning the what-it-is, our undertaking will be yet more difficult, since it will be necessary in each case to find out what the way [to inquire] is. But even if it is evident that it is demonstration or division or some other method of inquiry, there will still be much puzzlement and much variability as to what to base our inquiry on.[5] For distinct things—for example, numbers and planes—have distinct starting-points.

[P1] First of all, presumably, it is necessary to determine in which of the genera the soul belongs and what it is—I mean whether it is a this something and a substance or a quality, a quantity, or in some other of the categories that have been distinguished.[6] [P2] Further, whether it is one of those beings that are potentially or whether it is rather a sort of actuality.[7] For this makes no small difference. [P3] Also, we must **402b1** investigate whether it has parts or is partless, and [P4] whether all souls are of the same form, and [P5] if not, whether they differ in species (*eidos*) or in genus (*genos*).[8] For, as things stand, people who speak and inquire about the soul seem to investigate the human soul alone. [P6] And we must be careful not to neglect to consider whether there is one account of the soul, as of animal, or whether there is a distinct account of each (for example, of horse, dog, human, god)—animal, the universal, being either nothing or posterior.[9] And similarly if there is any other common thing predicated.[10]

[P7] Further, if there are not many [sorts of] souls but rather [one sort of soul with] many parts, should we inquire into the whole soul or its parts? Again, it is difficult to determine which of the parts are naturally distinct from each other, and whether we should inquire into the parts first or their functions—for example, understanding or *the* understanding, perceiving or the perceptual part, and similarly in the other cases.[11] [P8] And if the functions come first, again a puzzle might be raised about whether we should inquire into the corresponding objects before these—for example, the perceptible object before the part that can perceive, and the intelligible object before the understanding part.[12]

It seems, though, that the knowledge of the what-it-is is not only useful for getting a theoretical grasp on the causes of the coincidents connected to the substances (as in mathematics knowing what the straight is and what the curved is, or what a line is and what a plane is, is useful for seeing how many right angles the angles are equal to), but also, conversely, knowing these coincidents contributes in great part to knowing the what-it-is.[13] For when we can give an account of all or most of these coincidents that is in accord with what appears so, we will then be able to speak best about the substance.[14] For the starting-point of all demonstration is the what-it-is, so that insofar as definitions [of it] do not lead us to know the coincidents, or fail even to facilitate a likely conjecture about [how to demonstrate] them, it is clear that they have all been stated in a dialectical and empty way.[15]

[P9] There is a puzzle too about the affections of the soul, as to whether they are all also shared by what has the soul or whether there is also some affection that is special to the soul itself.[16] For it is necessary to attain [a resolution of] this, but it is not easy. It appears that in most cases, though, the soul is neither affected by nor does it act without the body—for example, being angry, being confident, having an appetite for things, perceiving in general—whereas understanding seems to be most of all special to the soul.[17] Yet if it too is a sort of imagination, or does not exist without imagination, it would not be possible even for it to exist without a body.[18]

If, then, some function or affection of the soul is special to it, it will be possible for it to be separated. But if there is nothing special to it, it will not be separable, but will be like the straight, to which, insofar as it is straight, many coincidents belong—for example, it will touch a bronze sphere at a point, although, if separated, the straight will not touch it in this way.[19] In fact, it is inseparable, since it always involves some body.

So too the affections of the soul—spiritedness, mild-mannerdness, fear, pity, confidence, and, further, joy, loving, and hating—would all seem to involve the body, since at the same time as these the body is affected in a certain way.[20] This is evidenced by the fact that sometimes, though strong and vivid affections take place in us, we are not provoked or frightened, whereas at other times we are moved by small and faint ones, as when the body is aroused (*orga[i]*) and its condition is like when someone is angry (*orgizatai*). It is yet more evident that this is so. For sometimes, though nothing frightening is occurring, people come to have the affections of a frightened person.

If this is so, however, it is clear that the affections of the soul are enmattered accounts.[21] So their definitions will be of this sort, for example: “Being angry is a sort of movement of such-and-such a sort of body, or of a part or a capacity, as a result of this for the sake of that.”[22] And this is why it already belongs to the natural scientist to get a theoretical grasp on the soul, either all soul or this sort of soul.[23]

But a natural scientist and a dialectician would define each of these differently—for example, what anger is. For a dialectician it is a desire for retaliation or something like that, whereas for a natural scientist it is a boiling of the blood and hot stuff around the heart.[24] Of these, the natural scientist gives the matter, whereas the dialectician gives the form and the account. For this is the account of the thing, although it must be in matter of such-and-such a sort if it is to exist. And so of a house the account is this, that it is a shelter to prevent destruction by winds, rain, and heat. But one person will say that it is stones, bricks, and timbers, and another that it is the form in them for the sake of these other things.

Which of these people, then, is the natural scientist? Is it the one concerned with the matter but ignorant of the account, or the one concerned with the account alone? Or is it rather the one concerned with what is composed of both? Who, then, is each of the others? Or is there not someone who is concerned with the affections of the matter that are not separable and insofar as they are not separable? Or is the natural scientist rather the one who is concerned with everything that is a function or affection of this sort of body and this sort of matter?[25] And isn't anything not of this sort the concern of someone else, in some cases a craftsman, if there happens to be one, such as a builder or a doctor? And aren't those things that are not separable, but are considered insofar as they are not affections of this sort of body and in abstraction from it, the concern of the mathematician?[26] And insofar as they are separate, that of the primary philosopher?[27]

But let us return to where our account began. We were saying that the affections of the soul are—at any rate, insofar as they are like spiritedness and fear—inseparable in this way from the natural matter of the living things to which they belong, and not in the way that line and plane are.

I 2

In our investigation concerning the soul it is necessary to go through the puzzles from which we must become free as we proceed and at the same time to collect the beliefs of those of our predecessors who declared any views on the subject, so that we may take what is correct in what they say, and, if anything is incorrect, guard against it.[28]

A starting-point of our inquiry is to set out the things that seem most of all to belong in accord with nature to the soul. What is animate, then, seems to differ from what is inanimate most of all in two regards—moving and also perceiving. And these are pretty much the two characteristics of soul that have been handed down to us by our predecessors. For some say that what causes movement is most of all and primarily soul. And thinking that what was not itself in movement could not possibly move something else, they took the soul to be a thing that is in movement.

That is what led Democritus to say that the soul is a sort of fire.[29] For the shapes and atoms are unlimited and those that are spherical he says are fire and soul—which are like the so-called motes in the air that appear in the sunbeams that come through our windows.[30] The aggregate of such seeds, he says (and likewise Leucippus), are the elements of the whole of nature, while those of them that are spherical are the soul, because being of such a shape they are especially capable of moving through everything and—being themselves moving—of moving the rest, on the supposition that the soul is what imparts movement to animals.[31] That is why, too, they make breathing the defining mark of being alive.[32] For when the surrounding air compresses their bodies it squeezes out those atomic shapes which, because they are never at rest themselves, impart movement to animals. Then aid comes from outside by the entry of other similar atoms in breathing. For these prevent the squeezing out of those that are already inside, helping to counteract what is doing the compressing and solidifying. And life continues just so long as they are capable of doing this.[33]

What the Pythagoreans say seems to contain the same thought. For some of them said that the motes in the air are soul, others that it is what moves them. The reason they spoke in terms of these motes is that they are evidently in continuous movement, even when it is completely calm. And those who say that the soul is what moves itself tend in the same direction.[34] For all these thinkers seem to have supposed that movement is what most properly belongs to the soul, and that other things are moved because of the soul, whereas it is moved by itself; this is because they never see a mover that is not itself moving.

Similarly too Anaxagoras says that the soul is what moves things, as does anyone else who says that understanding caused the universe to move.[35] But his position is not *altogether* like that of Democritus. For the latter, soul and understanding are unconditionally the same, since what is true is what appears—which is why [in his view] Homer put it well when he said, "Hector lying there thinking altered thoughts."[36] Democritus, then, does not treat the understanding as a capacity concerned with truth, but says that soul and understanding are the same. Anaxagoras, on the other hand, says little that is perspicuous about them. For in many places he says that understanding is the cause of what is nobly and correctly so, but elsewhere that it is the soul, which belongs to all animals, great and small, estimable and less estimable.[37] But understanding—in the sense of wisdom—appears not to belong to all animals, or even to all humans.[38]

Those, then, who have looked to the movement of what is animate took the soul to be what is most capable of moving things, whereas those who looked to knowing and perceiving beings said that it was their starting-point or starting-points, some positing a plurality of these, others one of these. Thus Empedocles says that it is composed of the elements, each of these also being soul. He says:

For by earth, we see earth, by water, water,
By ether, divine ether, but by fire blinding fire,
By love love, and strife by baneful strife.[39]

And in the same way Plato in the *Timaeus* generates the soul from the elements, since like is known by like, and things are composed of the elements.[40] And similarly in *On Philosophy* it was determined that the animal-itself is composed of the Idea-itself of the one and the primary length, breadth, and depth, and the other things in the same way.[41] Further, this has also been put in another way: understanding is the one, scientific knowledge the two (for it proceeds in a single way toward one thing), belief is the number of the plane, and perception that of the solid.[42] For the numbers, though they are the Forms themselves and the starting-points, are nevertheless generated from the elements.[43] And some things are discerned by understanding, others by scientific knowledge, others by belief, others by perception—and the numbers are the Forms of these.[44]

On the other hand, since the soul seemed to be both capable of moving things and, in the aforementioned way, capable of knowledge, some thinkers generated it from a combination of both and declared the soul to be a self-moving number.[45]

People differ with each other, however, about the starting-points, about what sort they are and how many they are, especially those who make them corporeal with those who make them incorporeal, and these with those who mix them and draw their starting-points from both differ.[46] They also differ as to their number. For some speak of one, others of a plurality. And they consequently differ too in the accounts they give of the soul. For they quite reasonably took it that the nature capable of causing movement must be among the primary things. This is what led some to believe that it is fire. For fire is the most fine-grained and most incorporeal of the elements, and furthermore is moved and also moves other things in a direct way.[47]

Democritus has more subtly explained each of these [characteristics of soul].[48] For soul and understanding are [for him] the same thing, and this is among the primary and indivisible bodies, and its capacity to move things is due to the smallness of its particles and their shape. But of the shapes, the most easily moved, he says, is the spherical, and both the understanding and fire are such.

Anaxagoras, while seeming to speak of soul and understanding as distinct, as we said earlier, treats them both as a single nature, except that he regards understanding above all as the *starting-point* of everything.[49] At any rate, he says that it alone of the beings is simple, unmixed, and pure.[50] And he assigns both knowing and causing movement to the same starting-point, when he says that understanding set the universe moving.[51]

Thales, too, to judge from what is recounted about him, seems to have taken the soul to be something capable of moving things, if indeed he said that a magnet has a soul because it moves iron.[52]

Diogenes, however, as well as some other people, took the soul to be air, thinking that of all things air is composed of the smallest particles and is a starting-point. And this is why the soul knows and moves things—knowing them insofar as it is a primary thing from which the rest derive, and moving them insofar as its particles are the smallest.[53]

Also, Heraclitus says that the starting-point is soul, if indeed it is the "evaporation" from which the other things are composed, and furthermore that it is the least corporeal thing and always flowing, and that it is by something moving that something moving is known.[54] For he thinks that the beings are in movement, as most thinkers do.[55]

Alcmaeon too seems to take the soul in a somewhat similar way to these.[56] For he says that it is immortal because it resembles immortal things, and that this affection belongs to it because it is always in movement. For divine things—the moon, the sun, the stars, and the whole heaven—are always in continuous movement.[57]

Among the cruder thinkers, there have been some, such as Hippo, who have declared the soul to be water.[58] They seem to have been convinced of this on the basis of seed, because the seed of all things is moist. For Hippo refutes those who say that the soul is blood, on the grounds that the seed is not blood, and that seed is the primary soul. But others, like Critias, have said the soul is blood.[59] They take perceiving to be what most properly belongs to soul, and that this belongs to it because of the nature of blood. In fact each of the four elements has found some judge in its favor, except earth.[60] For it no one declares to be soul, except those who have said that it is composed of all the elements or is all of them.

All, then, define the soul by—one might almost say—three characteristics: moving, perceiving, being incorporeal. And each of these is referred back to the starting-points. That is why those who define it by knowing either make it an element or composed of the elements, all speaking in somewhat similar ways as each other, except for one.[61] For like, they say, is known by like. For since the soul knows all things, they put it together from all the starting-points. Hence those who say that there is one cause and one element also regard the soul as one (for example, fire or air), whereas those who speak of a plurality of starting-points also make the soul a plurality. Anaxagoras alone says that the understanding is unaffectable and has nothing in common with any of the other things.[62] But how, if it is like that, it will know anything and due to what sort of cause, he does not say, nor is it evident from the things he does say.

Those who make pairs of contraries their starting-points also put the soul together from contraries, whereas those who make one or other of the two contraries such—for example, hot or cold, or something else of that sort—likewise regard the soul too as one of these. That is why they also allow themselves to be guided by the names. Those who pick the hot say that it is also because of this that *to zên* (life) is so named [because *zein* means "to boil"], whereas those who pick the cold, say that it is because of this—because of the process of breathing and cooling (*katapsuxis*)—that *psuchê* (soul) is so named.

These, then, are the views about the soul that have been handed down, as well as the causes due to which they are stated in the way they are.

I 3

First we must investigate movement. For perhaps it is not merely false that the substance of the soul is the sort of thing that it is said to be by those who say that the soul is what moves—or is capable of moving—itself, but rather for movement to belong to the soul is something impossible.

Now, we said earlier that it is not necessary for what moves things to be itself moving.[63] For there are two ways in which anything can be moving—either with reference to something else or intrinsically. By "with reference to something else" I mean things that are moving because they are in something that is moving—for example, sailors. For they are not moving in the same way as the ship. For the ship is moving intrinsically, whereas they are moving because they are in something that is moving. This is clear in the case of their parts. For the movement that properly belongs to the feet is walking, and this is also the movement that properly belongs to humans. But it does not belong to the sailors in the present case. Since, then, things are said to be moving in these two ways, we are now investigating about the soul whether it is moving, and participates in movement, intrinsically.

There are four sorts of movement—spatial movement, alteration, withering, and growth.[64] It is, then, with one or more or all of these that the soul would move. But if it is moved non-coincidentally, there would be a movement that belongs to it by nature, and, if this is so, place will so belong to it as well, since all the aforementioned sorts of movement occur at a place.[65] But if the substance of soul is to move itself, movement will not belong to it coincidentally, as it does to the pale or the three cubits in length.[66] For these are also moved, but coincidentally, since it is what they belong to that is moved, namely, the body. That is also why they have no place belonging to them, whereas the soul will have a place, if indeed it by nature participates in movement.[67]

Further, if it is moved by nature, it will also be moved by force, and if by force, then also by nature.[68] And it is the same way with rest as well. For what something by nature moves toward, it also rests in by nature. Similarly, what it moves toward by force, it also rests in by force. But what sorts of things forced movements and rests of the soul are, it is not at all easy to give an account of, even if we wished to just fabricate one.

Further, if the natural movement of the soul is upward, it will be fire, if downward, earth, since these are the movements belonging to these bodies.[69] The same argument also applies to the intermediate ones.[70]

Further, since it is evident that the soul moves the body, it is quite reasonable to suppose that it moves it with the same movements with which it is itself moved. But if this is so, then, reversing the order, it is also true to say that the ones with which the body is moved are also the soul's. Now the body moves with spatial movement. So the soul too would change in accord with the body, either moving as a whole or in respect of its parts.[71] But, if this is possible, it would also be possible for a soul that had gone out of a body to enter it again, and from this would follow the possibility of the resurrection of animals that have died.[72]

Coincidental movement of the soul may indeed be caused by something else. For an animal may be pushed along by force. But something that has being moved by itself included in its substance cannot be moved by something else, except coincidentally—just as what is intrinsically good or good because of itself cannot be good because of something else or for the sake of something else. We would say, though, that it is most of all by perceptible objects that the soul is moved, if indeed it is moved at all. But then again if the soul *does* move itself, it would itself also be moved. So if all movement is a displacement of what is moved insofar as it is moved, the soul must be displaced from its substance, if it does not move itself coincidentally but, rather, movement belongs to its substance intrinsically.[73]

Some people even say that the soul moves the body in the way in which it is itself moved—for example, Democritus, who speaks in a somewhat similar way to Philippus, the comic dramatist. For Philippus says that Daedalus made the wooden statue of Aphrodite to move by pouring quicksilver into it.[74] Similarly, Democritus says that the spherical atoms, which are moving because by nature they can never remain still, draw the whole body after them and so produce its movements.[75] But do these same atoms, we shall ask, produce rest as well? How they could do so it is difficult, or even impossible, to say. And, in general, it does not appear to be in this way that the soul moves the animal, but rather through a sort of deliberate choice and understanding.[76]

In the same way Timaeus gives a physicalistic account of how the soul moves the body, since by its own movement it moves the body as well, because of being woven together with it.[77] For when it had been constituted from the elements and divided into parts in accord with the harmonic numbers, in order that it might have a native perception of harmony and that the universe might move in harmonic revolutions, he bent the straight line into a circle, and, having divided the one circle into two, intersecting at two points, he again divided one of these into seven, the spatial movements of the heaven being regarded as the movements of the soul.[78]

[1] Now, in the first place, to say that the soul is a spatial magnitude is not correct. For by the soul of the universe Timaeus clearly means the sort of soul that is called the understanding (for it certainly is not of the perceptual sort, or of the appetitive sort, since the movement of these is not circular spatial movement).[79] And the understanding is one and continuous in the same way as the activity of understanding, and the activity of understanding as the intelligible objects.[80] These are one by succession, however, just like number, but not like spatial magnitude.[81] That is why the understanding is also not continuous in that way, but either is partless or continuous in a way different from a continuous magnitude. For how, indeed, could the understanding, if it were a spatial magnitude, understand anything? [1a] Will it do so with any of its parts whatsoever, such parts being regarded either as magnitudes or as points (if a point is to be called a part)?[82] [1a–i] If it is with parts regarded as points, since these are unlimited in number, clearly the understanding will never get through them all.[83] [1a–ii] If it is with parts regarded as magnitudes, the understanding will understand the same thing many or an unlimited number of times.[84] But it is evidently possible to do so even once. And if it is enough for it to touch with any of its parts whatsoever, why should it move in a circle, or have magnitude at all? But if it is necessary for understanding the object that the whole circle touch it, what does the touching *by the parts* consist in?

[2] Further, how will what is partless understand what has parts, or what has parts understand what is partless? It must be the understanding that is the circle in question. For the movement of the understanding is understanding, while that of a circle is revolution. If, then, understanding is revolution, the understanding must be the circle in question and its revolution must be understanding. What, then, will it always be understanding—for there must be something, if indeed the revolution is eternal?[85] For of all practical understandings there are limits (for they are all for the sake of other things), whereas all theoretical ones are similarly determined by accounts.[86] Now every account is either a definition or a demonstration.[87] And demonstrations are both from a starting-point and have a sort of end, namely, the deduction or the conclusion.[88] But even if they do not terminate, at any rate they do not return again to the starting-point, but, repeatedly taking middle

and extreme terms, proceed in a straight line, whereas circular spatial movement does bend back again toward the starting-point. Definitions too are all limited in length.[89]

[3] Further, if the same revolution comes about often, the understanding must often think the same thing.[90]

[4] Further, understanding something is more like a coming to rest or coming to a stop than a movement, and it is the same way with a deduction.[91]

[5] But then what is not moving easily but by force is certainly not blessedly happy either.[92] And if movement is not its substance, the soul would be moved against its nature.[93]

[6] On the other hand, the intermixing of the body with the soul without the possibility of release is laborious—more than that, it is something to be avoided, if indeed it is better for the understanding not to be involved with the body, as is customarily said and seems to many people to be so.[94]

[7] Also, the cause of the circular spatial movement of the heaven is unclear [from what Timaeus says]. For the substance of the soul is not the cause of the circular spatial movement (on the contrary, that sort of movement is coincidental to it) and neither is the body (on the contrary, it is the soul that causes the body's movement).

[8] But then it is not said, either, that this movement is better. And yet it was supposed to be because of this that the god makes the soul move spatially in a circle, namely, that movement is better for it than remaining at rest, and that this sort of movement better than any other. But since this sort of investigation properly belongs to other accounts, let us leave it aside for now.[95]

[9] There is another absurdity, however, that follows both from this account and from most of the ones concerning the soul, since in fact they attach the soul to a body, and place it in a body, without further determining the cause due to which this attachment comes about or the condition of the body required for it. Yet this would seem to be necessary. For it is because of their association that the one acts, whereas the other is acted upon, and the one is moved, whereas the other moves it. None of these relations, though, holds between things taken at random.

These people, however, merely undertake to say what sort of thing the soul is, but about the sort of body that is receptive of it they determine nothing further, as if it were possible, as in the Pythagorean stories, for any random soul to be inserted into any random body, whereas it seems that in fact each body has its own special form and shape.[96] But what they say is somewhat like saying that the craft of carpentry could be inserted into flutes, whereas in fact the craft must use *its* instruments, and the soul *its* body.

I 4

There is also another doctrine handed down about the soul, which many find no less plausible than those we have mentioned, and which has given an account of itself under examination even in the common accounts.[97] For its supporters say that the soul is a sort of harmony. For, they say, a harmony is a blend and a composition of contraries, and the body consists of a combination of contraries.[98] [1] A *harmony*, however, is a sort of ratio or combination of the things that are mixed together, and the soul cannot possibly be either of these.

[2] Further, a harmony cannot move anything, yet everyone assigns this to the soul as—one might almost say—its chief characteristic. It is more in harmony with the facts to speak of harmony in connection with health and bodily virtues as a whole than in connection with the soul. This becomes most evident if we try to assign the affections and functions of the soul to some sort of harmony, since it is difficult to make them "harmonize" with it.

[3] Further, if we speak of harmony, we may have two cases in mind: the strictest one is that of spatial magnitudes in things that have movement and position, where harmony consists in their being positioned together, whenever they so fit together that nothing of the same kind (*genos*) can intervene.[99] Derivatively, we may have in mind the ratio of the things that are mixed together. Neither of the two, though, makes the doctrine reasonable. And if the harmony is the composition of the parts of the body, it makes it very easy to criticize. For the compositions of the parts are many and various. Of what, then, and in what way should we suppose the understanding to be a composition? Or the perceptual part or the desiring part? It is similarly absurd, however, for the soul to be the ratio of the mixture. For the mixture of the elements is not in the same ratio in flesh as in bone. It will follow, then, that there are many souls and that they are found throughout the whole body, if indeed all [its parts] result from mixtures of the elements, and the ratio in the mixture is a harmony—that is, a soul.

(We might ask the same question of Empedocles, since he says that each of the parts exists by virtue of some ratio. Is the soul, then, the ratio, or rather a distinct thing that comes about in the parts? Further, is love the cause of any random mixture, or the one that is in accord with the ratio, and is love the ratio or a distinct thing beyond the ratio?)[100]

These, then, are the sorts of puzzles that arise.

[4] On the other hand, if the soul is something distinct from the mixture, why then are the being for flesh and for the other parts of the animal destroyed at the same time?[101]

[5] In addition to these points, if indeed each of the parts does not have a soul, if the soul is not the ratio of the mixture [in it], what is it that passes away when the soul leaves it behind?

That the soul cannot be a harmony, then, and cannot revolve in a circle is clear from what has been said. But coincidentally it can be moved, as we said, and can move itself—for example, what it is in can be moved and be moved by the soul. In no other way, though, can it possibly be moved with respect to place.

We might more reasonably raise a puzzle about how the soul is in movement, though, by looking to the following considerations. For we say that the soul is pained, enjoying, feeling confident, feeling afraid, and, further, is feeling angry and also perceiving and thinking. And all of these seem to be movements. Hence we might think that the soul itself is being moved. But this is not necessarily so. For even if we grant that being pained or enjoying or thinking are in the highest degree movements, and that each is a case of something's being moved, but that its being moved is due to the soul, as being angry or being afraid is the heart being moved in this way, and as thinking is presumably this or something else being moved, and these come about in some cases by the spatial movement of certain things with respect to place and in others by their alteration (which ones and in what way is another story)—still, even then, to say that the soul is feeling angry is like saying that the soul is weaving or building. For presumably it is better not to say that the soul is feeling pity or learning or thinking, but rather that the human being is doing so by means of his soul. And this not because the movement is in the soul, but because sometimes it reaches as far as the soul, and sometimes begins from it—for example, perception begins from particular things, while recollection begins from the soul and extends to the movements or the traces in the perceptual organs.[102]

The understanding, on the other hand, seems to be born in us as a sort of substance, and not to pass away.[103] For if it could pass away it would most of all be due to the feebleness of old age, whereas, as things stand, it is like what happens in the case of the perceptual organs. For if an old man could get such-and-such a sort of eye, he would see as well as even a young one. So old age is not due to the soul's being affected in a certain way but, rather, what the soul is in, as in the case of drunkenness and disease.[104] And in particular understanding and contemplating are extinguished because something else within passes away, but the understanding itself is unaffectable. But thinking and loving or hating are not affections of the understanding but of what has it, insofar as it has it. That is why when that passes away it neither remembers nor loves.[105] For they were not affections of it, but of what is common, which has passed away.[106] But the understanding is perhaps something divine and is unaffectable.[107]

That the soul cannot be moved, then, is evident from these considerations. But if it cannot be moved at all, clearly it does not move itself.

The most unreasonable of the views we mentioned, though, is that which says that the soul is a self-moving number.[108] For its supporters are subject on the one hand to the first impossibilities, namely, those that stem from the soul's being moved, and on the other to the ones special to it, which stem from saying that it is a number. For how are we to understand a unit as being in movement? By what is it moved, and in what way, since it is partless and undifferentiated? For insofar as it is capable of moving things and of being moved, it must admit of differentiation.[109]

Further, since they say that a line when moved makes a surface, and a point a line, the movements of the units will also be lines.[110] For a point is a unit that has position, and the number of the soul is, of course, somewhere and has position.

Further, if you subtract a number or a unit from a number, another number remains, whereas plants and many animals, when divided, continue to live and seem to have the same kind (*eidos*) of soul.

Besides, it would seem to make no difference whether we speak of units or tiny bodies. For if the spheres of Democritus became points, with only quantity remaining, there will be in it a mover and a moved, just as there is in a spatially continuous thing.[111] For it is not because of a difference in its greatness or smallness that what we have mentioned follows, but because it is a quantity. That is why there must be something that will move the units. But if in an animal the mover is the soul, it must also be so in the number [with which the soul is identified], so that the soul will not be the mover *and* the moved but the mover only. How, then, can this possibly be a unit? For it must be different in some way from the other units. But for a point that is a unit what difference could there be except position? Now if the units—that is, the points—in the body are distinct [from the units in the soul number], the units will be in the same place as they are, since each will occupy the space of a point.[112] And yet what prevents an unlimited number of things from also being in the same place if two can be?[113] For things whose place is indivisible are so themselves. If, on the other hand, the points in the body are the number of the soul, or if the number of the points in the body is the soul, why do not all bodies have a soul? For there seem to be points in all of them—indeed, an unlimited number.

Further, how is it possible for the points to be separated and set free from the bodies, if at any rate lines do not divide up into points?[114]

I 5

The result, as we said, is that in a way this view says the same thing as those who posit that the soul is some sort of fine-grained body, whereas in another way, like Democritus saying that movement is caused by the soul, it has a special absurdity of its own.[115] For if indeed the soul is present in every part of the percipient body, there will necessarily be two bodies in the same place, if the soul is a sort of body. For those, on the other hand, who say that the soul is a number, there will be many points in one point, and every body will have a soul, unless it is of a different sort from the number that comes to exist in the body and is distinct from the points present in it.[116] It also results that the animal is moved by the number in the way that Democritus said something moved it. For what difference does it make whether we speak of small spheres, large units, or simply spatially moving units? For either way these must move the animal by themselves moving.

For those, then, who combine number and movement in the same thing these are the consequences, as well as many others of the same sort. For it is not only impossible for something of this sort to be the definition of soul, it cannot even be a coincident of it.[117] And this is clear if we try on the basis of this account to give one of the affections and functions of the soul—for example, rational calculations, perceptions, pleasures, pains, and other things of this sort. For, as we said earlier, it is not even easy to conjure one up on this basis.[118]

Three ways have been handed down in which people define the soul: some have declared it to be what is most capable of moving things, since it moves itself; some that it is a body that is most fine-grained or least corporeal of all. We have pretty much gone through the puzzles and inconsistencies that these involve. It remains, though, to investigate what it means to say that the soul is composed of the elements. For they say this in order that it may perceive the beings and know each of them. But many impossibilities necessarily follow for this account.

For they posit that knowing is of like by like, as if positing that the soul is the things [it knows]. But there are not only these [elements] but also many other things, or perhaps rather an unlimited number, composed of them. Granted, then, that the soul knows and perceives the things from which each of these is composed, with what will it know or perceive a compound—for example, what god, human, flesh, or bone is? And similarly for any other composite thing. For it is not in any state whatsoever that the elements are each of these but rather in a certain ratio and combination, as Empedocles says of bone:

> The pleasant Earth in its well-wrought melting pots
> got two parts of glittering water, out of its eight parts,
> and four of fire; and so white bones were formed.[119]

Hence there is no benefit in the elements being in the soul, if the ratios and the combination will not also be present. For each [element] will know its like, but there will be nothing to know bone or human, if these will not also be present. But that this is impossible there is no need to say. For who would raise a puzzle as to whether a stone or a human is present in the soul? Likewise with the good and the not good, and in the same way other things.[120]

Further, things are said to be in many ways, since on the one hand it signifies the this something and on the other, quantity, quality, or some other of the categories that have been distinguished.[121] Will the soul be composed of all these or not? But there do not seem to be elements common to all of them. Is it composed only of the elements of substances? How then will it also know each of the others? Or will they say that there are elements and starting-points special to each kind (*genos*) and the soul is composed of these?[122] It will then be quantity, quality, and substance. But it is impossible from the elements of quantity to compose a substance and not a quantity.

For those, then, who say that the soul is composed of all the elements, these, and others like them, are the difficulties that follow.

It is also absurd to say both that like is unaffectable by like and also that like perceives like and knows like by like.[123] But they posit perceiving as a sort of being affected and moved, and both understanding and knowing likewise.

And there are many puzzles and difficulties with saying, as Empedocles does, that it is by its corporeal elements that each thing is known, that is, by reference to its like, as what has been said testifies. For the parts of the bodies of animals that are simply earth—for example, bones, sinews, and hair—seem to perceive nothing. So they do not even perceive their like. And yet this is what should properly happen.

Further, each of the starting-points will have more ignorance than comprehension.[124] For each will know one thing, but be ignorant of many—in fact, of all the others. A consequence for Empedocles at any rate is that the god will be the least wise thing of all, since he alone will not know one of the elements, namely, strife, whereas mortals will know everything, for each is composed of all the elements.[125] In general too what is the cause due to which not every being has a soul, since every one is either an element or composed of one element, or of several, or of all? For it is necessary for one, or some, or all of them to have knowledge.

We may also raise a puzzle, though, as to what it is that makes these one [soul]. For the elements seem to be like matter; the most controlling factor, whatever it is, seems to be what holds them together.[126] But it is impossible that anything should be stronger than the soul and a ruler of it—and yet more impossible in the case of the understanding. For it is reasonable for this to be by nature the most primordial thing and a ruler, whereas they say that the elements are the first of [all] beings.[127]

But all even of those who say that because the soul knows and perceives the beings it is composed of the elements, as well as those who say that it is most capable of moving things, are not speaking about all soul. For not all perceiving beings are capable of moving things (for there appear to be certain animals that remain stationary with respect to place, and yet movement with respect to place seems at any rate to be the only sort of movement that the soul causes in the animal).[128] Similarly too with those who produce the understanding and the perceptual part from the elements. For plants evidently live without sharing in perception, and of animals many do not have thought.

But even if we were to set aside these points and take the understanding to be a part of the soul, and the perceptual capacity likewise, they would still not, in speaking in this way, be speaking in universal terms about all soul or about the whole of any one soul.[129] This is also what tells against the account in the so-called Orphic poems.[130] For it says that the soul, being carried by the winds, enters in from the whole when breathing comes about.[131] But that cannot happen either in the case of plants or in that of some animals, if indeed not all of them breathe.[132] A point that escaped the holders of this view.

Also, if the soul must be produced from the elements, it need not be from all. For one member of a pair of contraries is sufficient to discern both itself and its opposite. For by the straight we know both itself and the crooked. For the standard straight-edge is a discerner of both, whereas the crooked is a discerner neither of itself nor of the straight.

There are some, too, who say that the soul is mixed together in the Whole. Presumably that is why Thales thought that all things were full of gods.[133] But this involves certain puzzles. For due to what cause does the soul in air or fire not produce an animal, whereas in mixtures it does—even though it seems to be of higher quality in the former? (We might also investigate what the cause is due to which the soul in the air is of higher quality and more immortal than the soul in animals.) Both ways we get an absurdity and something contrary to reason. For to speak of fire or air as an animal is entirely contrary to reason, and not to speak of them as animals if there is soul in them is absurd.

They seem to assume that the soul is in these, because the whole is the same in form (*homoeidês*) as its parts, so that it is necessary for them to say that the soul too is the same in form as its parts, if it is through a part of the surrounding element being cut off and enclosed in animals that they become living beings. But if air when divided into parts remains the same in form, whereas the soul has non-homoeomerous parts, it is clear that some of soul will be present in it, while some will not.[134] Hence, it is necessary either for the soul to be homoeomerous or for it not to be present in any and every part of the universe.

It is evident, then, from what has been said that knowledge does not belong to the soul because it is composed of the elements, and that it is not correctly or truly said, either, that it is in movement.

Since, however, knowing belongs to the soul, as well as perceiving and also believing, and furthermore having an appetite for things, wishing, and desires as a whole, and since movement with respect to place comes about in animals by virtue of the soul, as, furthermore, do growth, prime of life, and withering, we must ask whether each of these belongs to every part of the soul—that is, is it with the whole soul that we understand and also perceive and are moved, and, in the case of each of the others, are affected or do things, or distinct ones with distinct parts? And what about life? Does it reside in some one of these, or in several, or in all, or is something else the cause?

Now, some people say that the soul has parts, and that it understands with one part and has an appetite for things with another. But what is it, then, that holds the soul together, if it by nature has parts? For surely it cannot be the *body*. For it seems on the contrary that it is rather the soul that holds the body together. At any rate, when it departs, the body disintegrates and rots. If, then, it is something else that makes the soul one, that other thing would be most of all soul.[135] But then we shall have to inquire again as to whether it is one or multipartite. For if it is one, why isn't the soul directly one? And if it has parts, the argument will again inquire as to what holds it together, and in this way will go on without limit.

We might also raise a puzzle about the parts of the soul as to what capacity each has in the body. For if the whole soul holds all of the body together, then each of the parts should properly hold together some part of the body. But this seems impossible. For about what part the understanding will hold together and how it will do so it is difficult even to fabricate something.[136]

It is evident too that both plants and—among animals—some insects continue to live when divided, as having the same form of soul, even if not numerically the same one.[137] For each of the parts has perception and is moved with respect to place for a certain time. And if they do not continue to do so, there is nothing strange in that, since they do not have the instrumental parts necessary to preserve their nature.[138] But nonetheless in each of the segments all the parts of the soul are present, and they are the same in form as each other and as the whole—as each other, because they are not separable, as the whole soul, because it is not divisible.[139] The starting-point in plants also seems to be a sort of soul.[140] For this alone is common to both animals and plants, and it is separate from the starting-point of perception, whereas nothing has perception without it.

Book II

II 1

So much, then, for the views handed down by our predecessors concerning the soul. Let us go back again and start afresh, as it were, and try to determine what the soul is and what its most common account would be.[141]

We say, then, that one kind (*genos*) among the beings is substance, and of this, one sort is substance as matter, which is intrinsically not a this something, and another is shape and form, on the basis of which something is already said to be a this something, and a third, what is composed of these.[142] And matter is potentiality, whereas form is actuality—and this in two ways, as scientific knowledge is and as contemplating is.[143]

It is bodies that seem most of all to be substances, and among these, the natural ones.[144] For these are starting-points for the others.[145] Of natural bodies, some have life, while some do not have it. And by life we mean self-nourishment, growth, and decay. So every natural body that participates in life would be a substance, but a substance as a composite. But since it is also a body of such-and-such a sort, for it has life, it would not be a body. For the body is not among the things that are predicated of an underlying subject, but rather [is spoken of] as an underlying subject and matter.

It is necessary, then, for the soul to be substance as form of a natural body that has life potentially. But substance is actuality.[146] Therefore, it is the actualization of such a body. But something is said to be actual in two ways, either as scientific knowledge is or as contemplating is. And it is evident that it is as scientific knowledge is. For both sleep and waking depend on the presence of the soul; waking is analogous to contemplating, and sleep to having but not actualizing [scientific knowledge]; and in the same individual scientific knowledge is prior in coming to be.[147] That is why the soul is the first actualization of a natural body that has life potentially.

This sort of body would be one that is instrumental.[148] For even the parts of plants are instruments, although extremely simple ones—for example, the leaf is a covering for the pod and the pod for the fruit, and the roots are an analog of the mouth, since both take in nourishment.

If, then, we must state something that is common to every soul,
5 it would be that it is the first actualization of a natural instrumental
body. That is why we should not inquire whether the soul and the
body are one, any more than the wax and the shape, or, in general,
the matter of a given thing and that of which it is the matter.[149] For,
since one and being are said of things in many ways, the controlling
way is actuality.[150]

It has now been stated in universal terms what the soul is. For
10 the soul is a substance in accord with the account. And this is the
essence of this sort of body.[151] It is just like this: if an instrument—
for example, an axe—were a natural body, its substance would be the
being for the axe, and this would be its soul.[152] And if this were separated
from it, it would not still be an axe, except homonymously.[153]
As things stand, though, it is an axe. For it is not of this sort of body
15 that the essence and the account is the soul, but of a certain sort of
natural body that has a starting-point of movement and rest within
itself.

We must get a theoretical grasp on how what has been said applies
also in the case of the parts [of the body]. For if the eye were an animal,
sight would be its soul. For that is the substance of an eye, the one in
accord with the account. And the eye is matter for sight, and if this
20 fails, it is no longer an eye, except homonymously, like an eye in stone
or in a picture. We must now apply what holds in the case of the part
to the whole living body. For as the part is in relation to the part, so
analogously is the whole of perception in relation to the whole body
25 that is perceptual, insofar as it is such. But it is not what has lost its soul
that is potentially such as to live, but what has it. The seed and the fruit
are potentially bodies of this sort.[154]

As, then, are cutting and seeing, so too is being awake an actuality,
413ᵃ1 and as are sight and the capacity of the instrument, so is the soul,
whereas the body is what is potentially [alive]. But just as the eye-jelly
and sight are an eye, so in this case the soul and the body are an
animal.[155]

Hence that the soul is not separable from the body—or that certain
parts of it are not, if it naturally has parts—is quite clear. For of some
5 parts the actuality is of the parts themselves. Nevertheless nothing prevents
some of them at any rate from being separable, because of being
the actualities of no body.[156] Further, it is unclear whether the soul is
the actualization of the body in this way or in the way that a sailor is
of a ship.[157]

So much, then, by way of making determinations in outline and giving
10 a sketch of the soul.

II 2

Since it is from what is non-perspicuous but more evident that what is perspicuous and more knowable in accord with its account comes about, we must in this way try again to approach the soul.[158] For the defining account must not only make clear "the that," which is what most definitions state, but must also include the cause and make it evident.[159] As things stand, though, defining accounts are like conclusions. For example, What is squaring? Making an equilateral rectangle equal to one that is not equilateral. But such a definition is an account of the conclusion, whereas the one that states that squaring is the finding of the mean states the cause of the thing.[160]

We say, then, to make a start to the inquiry, that what has soul is distinguished from what lacks soul by living. But things are said to be living in many ways, and we say that a thing is alive if any one of these alone is present, for example, understanding, perception, movement and rest with respect to place, further the movement involved in nourishment, and also both withering and growth. That is why all plants too seem to be alive. For they evidently have within themselves a capacity and starting-point of this sort, through which they come to grow and decay in contrary directions. For they do not grow upward without growing downward, but grow in both directions alike, indeed in all directions, if they are constantly nourished and continue to live for as long as they are capable of taking nourishment. This can be separated from the others, but in the case of mortal beings the others cannot be separated from it. This is evident in the case of plants, since they have no other capacity of soul.

It is due to this starting-point, then, that life belongs to living things, whereas being an animal is due primarily to perception. For even what does not move or change its place, but which does have perception, is said to be an animal and not just a living thing. Now the primary sort of perception that belongs to all animals is touch. And just as the nutritive can be separated from touch and every perceptual capacity, in the same way touch can be separated from the other perceptual capacities.[161]

The nutritive, we say, is that part of the soul in which even plants share, whereas all animals evidently have the perceptual capacity of touch. The cause due to which each of these circumstances obtains, we shall state later.[162] For now, though, let this much alone be stated: the soul is the starting-point of the things we mentioned and is defined by these, namely, by the capacities of nourishment, perception, thought, and movement.

But is each of these a soul or a part of a soul, and if a part, is it separable only in account or also in place? Where some of them are concerned the answer is not difficult to see, whereas others involve puzzlement. For, just as in the case of plants some evidently live when divided and [the parts] are separated from each other, since the soul in them is actually one in each plant, but potentially many, in the same way we see this happening, where other differentiae (*diaphora*) of the soul are concerned, in the case of insects when they are cut in two.[163] For each part has perception and movement with respect to place—and if perception, then imagination and desire as well.[164] For where there is perception, there is also both pain and pleasure—and where these, of necessity appetite too. But where the understanding is concerned and the contemplative capacity, nothing is yet evident, but it seems to be a distinct kind (*genos*) of soul, and it alone admits of being separated, as what is eternal does from what is capable of passing away.[165]

It is evident from the foregoing considerations, however, that the remaining parts of the soul are not separable, as some people claim.[166] But that they are distinct in account is evident. For the perceptual part and the believing part are distinct, if indeed perceiving and believing are, and similarly for each of the other parts we mentioned.

Further, all of these belong to some animals, some to some, and only one to others, and this will produce differences (*diaphora*) among the animals. What the cause is, we must investigate later.[167] The situation is quite similar with the [different sorts of] perception. For some animals have them all, others some, others only the one that is most necessary, namely, touch.

But whereas something is said to be that by which we live or that by which we perceive in two ways, as is that by which we know scientifically (for in one way this is scientific knowledge, in another it is the soul, since we say that we know scientifically by each of these), and similarly we are healthy on the one hand by health and on the other by a part or even by the whole of the body, and whereas of these scientific knowledge and health are shape and a sort of form or account, and as it were activity of the recipient, in the one case of what is receptive of scientific knowledge or receptive of health (for the activity of those things that are capable of acting on something seems to occur in that which is affected and suitably disposed), and since the soul is that by which we primarily live, perceive, and think, the result is that it will be an account and a form, and not matter and the underlying subject.[168] For something is said to be a substance, as we mentioned, in three ways, as form, as matter, and as what is composed of both. And of these, the matter is potentiality, the form is actuality. And since what is composed of the two is an animate thing, the body is not the actualization of the soul, but rather the soul is the actualization of a certain sort of body.

And that is why those people take things correctly who believe that the soul neither exists without a body nor is a body of some sort. For it is not a body, but it belongs to a body, and for this reason is present in a body, and in a body of such-and-such a sort, rather than as our predecessors supposed, when they inserted it into a body without first determining in which and in what sort, even though it appears that not just any random thing is receptive of any random thing. In our way of looking at it, by contrast, it comes about quite reasonably. For the actualization of each thing naturally comes about in what it already belongs to potentially, that is, the appropriate matter.

That the soul, then, is a certain sort of actualization and account of what has the potentiality to be of this sort, is evident from these things.

II 3

Of the capacities of the soul we mentioned, some living things have all of them, as we said, others some of them, and some only one.[169] The capacities we mentioned were for nourishment, perception, desiring, movement with respect to place, and thought. To plants only the nutritive part belongs, whereas to others it belongs together with the perceptual part.[170] But if the perceptual one belongs, then so does the desiring one. For desire comprises appetite, spirit, and wish; all animals have at least one sort of perception, namely, touch; but for what has perception there is also pleasure and pain and the pleasant as well as the painful; and where there are these, there is also appetite, since it is a desire for the pleasant.[171]

Further, animals have a perception of what is nourishing, since touch is a perception of what is nourishing.[172] For all animals are nourished by dry, hot, wet, and cold things, of which the perception is touch. Of other perceptible objects it is the perception coincidentally. For neither sound nor color nor odor contribute anything to nourishment, whereas flavor is one of the objects of touch.[173] Hunger and thirst are appetite, hunger being for dry and hot, thirst for moist and cold. Flavor is a sort of seasoning of these. We must speak perspicuously about these matters later on.[174] For now, though, let us state this much: those living things that have touch also have desire. But where imagination is concerned, it is unclear, and must be investigated later on.[175]

Some have in addition to these the part capable of causing movement with respect to place, while others also have the thinking part and also understanding (*nous*)—for example, human beings and anything else there may be that is similar or more estimable.[176]

It is clear, then, that there could be a single account of soul in the same way as there is of figure. For in the latter case there is no figure beyond the triangle and the others that are next in order, and in the former there is no soul beyond the ones we mentioned.[177] Even in the case of the figures, though, we could produce a common account, which would fit them all and be special to no figure. Likewise too in the case of the souls we mentioned. That is why it is ridiculous to inquire after a common account both in these cases and in others, when it is an account that will not be special to any being, and will not accord with its proper indivisible species (*eidos*), to the neglect of the one that is of this sort.[178]

For the situation as regards the soul is quite similar to the one where the figures are concerned. For what is prior is always potentially present in what is next in order, both in the case of the figures and in the case of the animate things—for example, the triangle in the quadrilateral, and the nutritive part in the perceptual one. So we must inquire as regards each given case what the soul of each given one is—for example, what that of a plant is and that of a human or a beast.

And what the cause is due to which they have this order must be investigated. **415a1** For without the nutritive part there is no perceptual one, though the nutritive is separated from the perceptual one in the case of plants. Again, without touch none of the other sorts of perception is present, but touch is present without the others.[179] For many animals have neither sight nor hearing nor perception of odors. And of the ones that can perceive, some have the part capable of causing movement with respect to place, whereas others do not.[180] Finally, and most rarely, they have rational calculation and thought.[181] For among the ones capable of passing away, those that have rational calculation also have all the rest, whereas of those that have each of the others, not all have rational calculation, on the contrary, some do not even have imagination, whereas others live by this alone.[182] And concerning the theoretical understanding a distinct account is required.[183]

It is clear, then, that the account concerned with each of these parts is the most appropriate where a soul too is concerned.

II 4

Anyone who is going to make an investigation into these parts must grasp what each of them is, and thus must inquire about the things that follow, and about the others.[184] But if we have to say what each of them is—for example, what the understanding part is, or the perceptual, or the nutritive, we must further say first what understanding is and what perceiving is. For activities and actions are prior in account to capacities.[185] And if that is so, and further, if prior to them we must get a theoretical grasp on the corresponding objects, then we must, due to same cause, make some determinations about these—for example, about nourishment and perceptible and intelligible objects.

And so we must first speak about nourishment and generation. For the nutritive soul belongs to the others as well [as to plants], and it is the first and most common capacity of soul, in virtue of which life belongs to every one. Its functions are generation and the making use of nourishment.[186] For it is the most natural function in those living things that are complete, and not disabled or spontaneously generated, to produce another like itself—an animal producing an animal, a plant a plant—in order that they may partake in the eternal and divine insofar as they can.[187] For all desire that, and it is for the sake of it that they do whatever they do by nature. (The for-the-sake-of-which, though, is **415b1** twofold—the purpose for which and the beneficiary for whom.) Since, then, they cannot share in what is eternal and divine by continuous existence, because nothing that admits of passing away can persist as the same and numerically one, they share in them insofar as each can, some more and some less. And what persists is not the thing itself but something like itself, not one in number but one in form.

The soul of the living body is its cause and starting-point. But things are said to be these in many ways, and the soul is likewise a cause in three of the ways distinguished.[188] For the soul is a cause as that from which the movement comes, as that-for-the-sake-of-which, and as the substance of animate bodies.[189]

That it is so as substance is clear. For the cause of its being for everything is its substance; living is the being for living things; and the soul is cause and starting-point of this. Further, the actuality is the account of what is potentially.[190]

It is evident that the soul is also cause as that-for-the-sake-of-which. For just as the understanding does things for the sake of something, in the same way so does nature, and this is its end. And the soul is naturally such in animals. For all natural bodies—those of plants just like those of animals—are instruments of the soul, since they are for the sake of the soul.[191] But there are two ways in which something is said to be the for-the-sake-of-which—the purpose for which and the beneficiary for whom.

But then a soul is also that from which movement with respect to place first derives—although not all living things have this capacity.

There are also alteration and growth in accord with soul. For perceiving seems to be a sort of alteration, and nothing perceives that does not partake of soul. Similarly where growth and withering are concerned. For nothing either decays or grows naturally without being nourished, and nothing is nourished that does not have a share in life.

Empedocles did not speak correctly, however, when he added that growth comes about for plants in a downward direction when they root themselves because earth naturally moves spatially in that way, and in an upward direction because fire does likewise. For he does not grasp up and down correctly. For up and down are not the same for all things as they are for the universe, but as the head is of animals, so the roots are of plants—if we are to speak of instrumental parts as distinct or the same by appeal to their functions.[192] Besides, what is it that holds together the fire and the earth, since they are spatially moving in contrary directions? For they will be pulled apart, if there will be nothing to prevent it. But if there will be something, it is the soul—that is, the cause of growth and nourishment.

But some people think that it is the nature of fire to be the unconditional cause of nourishment and growth. For among the bodies fire alone is something that is nourished and grows. That is why we might suppose that in both plants and animals it is this that performs the function. But, though it is in a way a contributing cause, it is certainly not an unconditional cause. On the contrary, it is rather the soul that is this.[193] For the growth of fire is unlimited, as long as there is fuel, but there is a limit and an account of size and growth for things that are put together by nature; and these are characteristic of soul but not of fire, and of the account rather than of the matter.[194]

Since the same capacity of the soul is nutritive and generative, we must first make some determinations about nourishment.[195] For it is distinguished from the other capacities by this function.

Now, nourishment seems to be of contrary by contrary—not every one by every one, however, but wherever contraries not only come to be, but also grow from, each other. For many things come to be from each other, but not all are quantities—for example, the healthy comes to be from the sick. And not even those that do grow from each other appear to nourish each other in the same way—for example, water is nourishment for fire, whereas fire does not nourish water.[196] It seems, then, that it is especially among the simple bodies that one nourishes and the other is nourished.[197]

But a puzzle arises. For while some people say that like is nourished by like, just as with growth, others think the reverse, as we said, that it is contrary by contrary—the supposition being that like is unaffected

by like, whereas nourishment changes and gets concocted, and in every case change is into the opposite or into the intermediate.[198] Further, the nourishment is affected by the thing being nourished, but not it by the
nourishment, just as the carpenter is not affected by his material, but 35
it by him.[199] The carpenter, though, merely changes from inactivity to **416b1**
activity.[200]

But whether the nourishment is the final state of the thing added or the first makes a difference here. For if both are nourishment, but one is un-concocted and the other concocted, it would be possible to speak
of it as nourishment in both ways. For insofar as the nourishment is 5
un-concocted, contrary is nourished by contrary, whereas insofar as it is concocted, like is nourished by like.[201] So it is evident that both speak in a way correctly and in a way incorrectly.

But since nothing is nourished that does not partake in soul, what is nourished will be the ensouled body, insofar as it is ensouled, so that
nourishment is also relative to an ensouled being—and not coinciden- 10
tally so. The being for nourishment, however, is distinct from the being for a growth-producer.[202] For it is insofar as the ensouled thing has some quantity that a growth-producer exists for it, whereas it is insofar as it is a this something and a substance that nourishment does.[203] For the ensouled thing preserves its substance and lasts just as long as it
is nourished, and it is generative not of what is being nourished, but 15
of something of the same sort as what is being nourished.[204] For its own substance already exists, and nothing generates itself, but rather preserves itself. So this sort of starting-point of the soul is a capacity of the sort that preserves what has it, insofar as it has it, whereas nourish-
ment equips it to be active. That is why, if deprived of food it cannot exist. 20a
{But since the end is what determines what it is just to call everything, 23b
and the end is to generate something of the same sort as itself, the
primary soul will be one that can generate something of the same sort
as itself.}[205] 25a

Seeing that there are three things, what is nourished, what it is 20b
nourished by, and what nourishes, what nourishes is the primary soul,
what is nourished is the body that has it, and what it is nourished by
is the nourishment. But what it is nourished by is twofold, just like 23a
what a ship is steered by, namely, the hand and the rudder—the one 25b
causing movement and being moved, the other being moved only. For all nourishment must be capable of being concocted, and what effects the concoction is heat, which is why every ensouled thing has heat.[206]

What nourishment is has now been stated in outline. We must speak
perspicuously about it later in the appropriate accounts.[207] 30

II 5

Now that these matters have been determined, let us speak about what is common to all perception.

Perception comes about in being moved and affected, as has been said, since it seems to be a sort of alteration.[208] And some people say indeed that like is affected by like. In what way this is possible or impossible, we have said in our universal accounts concerning affecting and being affected.[209] A puzzle arises, though, as to why perception of the perceptual capacities themselves does not also take place, and why they do not produce perception without external objects, though present in them are fire, earth, and the other elements, of which there is perception either intrinsically or of their coincidents.[210]

It is clear, then, that the perceptual part is not active, but only potentially so.[211] That is why it does not perceive [without an external object], just as what is burnable does not burn all by itself without something to ignite it. For otherwise it would ignite itself, with no need of actual fire. But since we speak of perceiving in two ways (for we say of what is potentially hearing or seeing that it sees or hears, even if it happens to be asleep, and we also say it of what is actively doing so at the time), perception too will be spoken of in two ways—as potential, on the one hand, and as active, on the other. Similarly too the perceptible object is both the potential one and the active one.

First, then, let us speak on the supposition that being affected, being moved, and being active are the same. For, in fact, movement is a sort of activity, although an incomplete one, as has been said elsewhere.[212] Now, everything is affected and moved [in way F] by an agent that is actively [F].[213] That is why in one way like is affected by like and in another by unlike, as we said.[214] For it is the unlike that is affected, but when it has been affected it is like.

Distinctions, however, must also be drawn concerning potentiality and actuality. For just now we were speaking about them in a simple way.[215] [1] For one way that something can be a scientific knower is the way in which we would say that a human is a scientific knower because the human [species] is among the scientific knowers and the ones that have scientific knowledge.[216] [2] Another way is that in which we say that the person who already has knowledge of grammar is a scientific knower. Each of these is capable, but not in the same way—the first because his genus (*genos*), and his matter, is of the requisite sort, the other because he is capable of contemplating if he so wishes, and if nothing external prevents him.[217] [3] In a third way, there is the person who is already actively contemplating, the one who is actually and in the full sense scientifically knowing this letter A.[218] Both of the first two, then, are potential scientific knowers, but [1] the one because of having been altered through learning, that is, by frequent changes from the contrary state, whereas [2] the other, [because of having been altered] in another way [changes] from the state of having scientific knowledge of arithmetic or grammar, but not activating it, to activating it.[219]

And being affected is not simple, either. On the contrary, it is [1] on the one hand a sort of destruction of something by its contrary, while [2] on the other it is rather the preservation of what is potentially [F] by what is actually [F], and which is like it in the way that a potentiality may be like an actuality. For what possesses scientific knowledge becomes an actual contemplator, which is just either not an alteration, since the progress of the thing is into itself or into actuality, or else is a distinct kind (*genos*) of alteration. That is why it is not correct to say that what thinks, when it is thinking, is altered, just as it is not correct to say that the builder is altered when he builds.[220] The bringing, then, of what understands and thinks from doing so potentially to doing so actually should rightly be called not teaching but some other name. And a person who learns and acquires scientific knowledge, proceeding from being [a scientific knower] potentially by the agency of one who is actually [a scientific knower], should not be said to be affected, or else we should say that there are two ways of being altered, one a change to conditions of lack, the other to the positive states and the nature [of the thing].[221]

The first change in a perceiver is brought about by the parent, and when it has been born it already has—just like scientific knowledge—perception.[222] But something is similarly said to be actively perceiving and contemplating.[223] There is the difference, though, that in perception the things productive of the activity are external, namely, what is visible, what is audible, and similarly for the rest of the perceptible objects. The cause of this is that active perception is of particulars, whereas scientific knowledge is of universals, and these are in a way in the soul itself.[224] That is why it is up to us to understand—but not up to us to perceive—whenever we wish, since the perceptible object must be present. The same holds of the sciences that deal with perceptible objects, and due to the same cause, namely, that perceptible objects are particular and external.[225]

But about these matters there will be an opportunity to speak perspicuously later on as well.[226] For now, though, let it be enough to have determined this much, namely, what is said to be potential is not simple, but rather while there is what is so in the way we would say that a boy is capable of being a general, there is also what is so in the way that a man of the right age is capable of being one, and it is the same way with what is capable of perceiving.[227] But since there is no name for the difference (*diaphora*) between these, although it has been determined about them that they are distinct and in what way they are distinct, we must go on using "being affected" and "being altered" as if these names had their prevalent meaning.[228]

What can perceive is potentially such as the perceptible object already is actually, as has been said. It is affected, then, as being not like the object, but when it has been affected it is made like it, and is such as it is.

II 6

We should speak first about the perceptible objects of each given perceptual capacity. Things, though, are said to be perceptible objects in three ways. Of these, we say that we perceive two intrinsically, and one coincidentally. And of the two, one is special to a given perceptual capacity, the other common to all.

By a special object I mean whatever cannot be perceived by another perceptual capacity, and about which we cannot be deceived—for example, sight is of color, hearing of sound, taste of flavor, whereas touch has several different ones. At any rate, a given perceptual capacity is discerning about these, and does not make errors about whether there is color or whether there is sound, but rather about what the colored thing is or where it is, or what the thing making the sound is or where it is.[229]

Things like these, then, are said to be special objects of a given perceptual capacity, whereas those that are said to be common are movement, rest, number, shape, and size, since things like these are special to no perceptual capacity but common to all.[230] For indeed movement is perceived by touch and by sight.

A thing is said to be coincidentally perceptible—for example, suppose the pale is the son of Diares.[231] For you perceive the son of Diares coincidentally, because it is coincident with the pale, which you perceive [intrinsically].[232] And that is why you are not affected at all by the perceptible object insofar as it is the son of Diares.

Of the intrinsically perceptible things, it is the special objects that are perceptible in the full sense, and it is to these that the substance of each given perceptual capacity is by nature related.[233]

II 7

That of which there is sight, then, is visible. And what is visible is on the one hand color and on the other what may be stated in an account, but happens to have no name. What we mean will be clear as we proceed. For what is visible is color, and it is what is on [the surface of] what is intrinsically visible—intrinsically visible not in account, but because it has within itself the cause of its being visible. For every color is capable of causing movement in what is actually transparent, and this is its nature. That is why it is not visible without light, but rather the color of each thing is always seen in light. Which is why we must first say what light is.

There is, then, something transparent. And by transparent I mean what is indeed visible, although not intrinsically visible, simply speaking, but rather visible because of the color of something else. Air, water, and many solid bodies are of this sort. For it is not insofar as something is water or insofar as it is air that it is visible, but because there is a certain nature in it that is the same in both of them and in the [eternal] body above.[234] And light is the activity of this, of the transparent insofar as it is transparent. But whatever this is present in, so potentially is darkness. For light is a sort of color of the transparent, when it is made actually transparent by fire or something of that sort, such as the body above. For one and the same [affection] also belongs to it.[235]

What the transparent is, then, and what light is has been stated, namely, that it is not fire nor a body at all, nor an effluence from any body (for it would also be a body in that case), but rather the presence of fire or something of that sort in the transparent. For in addition to its not being possible for there to be two bodies in the same place at the same time, light also seems to be the contrary of dark. But dark is the lack of this sort of state in the transparent, so it is clear again that the presence of it is light.

And so Empedocles is not correct, and nor is anyone else who spoke in this way, that light travels and arrives at some time between the earth and what surrounds it, without our noticing it.[236] For this is contrary not only to what argument makes clear but also to what appears to be so. For over a short distance this might escape our notice, but that it should escape notice all the way from east to west is too much to ask.

It is the colorless that is receptive of color, and the soundless of sound. And the transparent is colorless, and so is the invisible or the scarcely visible—as, for example, the dark seems to be. The transparent is of this sort not when it is actually transparent, but rather when it is potentially so.[237] For the same nature is sometimes darkness and sometimes light.

Not everything, though, is visible in light, but only the color proper to a given thing. For some things are not seen in the light but instead produce perception in the dark—for example, things that appear fiery and shining (there is no one name for them), such as a snuffed wick, horn, and the heads, scales, and eyes of fish.[238] The color special to none of these is seen. (The cause due to which these are seen is a topic for another account.[239])

For now, though, this much is evident, namely, that what is seen in light is color. This is also why it is not seen without light. For this is what the being is for color, namely, to be capable of causing movement in what is actively transparent; and the actualization of the transparent is light.[240] There is an evident indication of this. For if we place what has color upon the organ of sight itself, it will not be seen. Instead, the color causes the transparent—for example, the air—to move, and due to this, when the transparent is continuous, the perceptual organ is moved. For Democritus did not speak correctly about this in supposing that if the intermediate space became a void, we would see an ant in exact detail even if it were up in the heaven.[241] For this is impossible. For seeing comes about because the part that can perceive is affected by something. Now it cannot be affected by the color that is being seen [since it is at a distance]. It remains, then, for it to be affected by what is intermediate, so that there must be something intermediate. If the intermediate space became a void, it is not that things would be seen in exact detail, but rather nothing would be seen at all.

The cause, then, due to which color must be seen in the light has been stated. Fire, though, is seen in both, namely, both in darkness and light, and this is of necessity so. For it is due to this that the transparent becomes transparent.

The same account applies to both sound and odor. For none of these produces perception when it touches the perceptual organ. Instead, due to odor and sound, what is intermediate is moved, and, due to this, each of the perceptual organs. And when we place what makes a sound or has an odor on the perceptual organ, it produces no perception whatsoever. (The same applies to touch and taste, though it does not appear to. The cause of this will be clear later.[242]) The medium for sounds is air and for smell something nameless. For there is an affection common to air and water, and as the transparent is to color so this affection, which belongs to both of these, is to what has odor. For even aquatic animals appear to have a perception of odor. But the human beings, and footed animals that breathe, cannot smell without breathing. The cause of these things too will be stated later.[243]

II 8

Now, though, let us make some determinations about sound and hearing. Sound is twofold. For one is active sound, the other potential sound. For some things we say do not have a sound, for example, sponge or wool, whereas others do, for example, bronze and things that are solid and smooth, because they are able to make sound, that is, to produce an active sound intermediate between themselves and the organ of hearing.

When a sound actively comes about, however, it is always of something, in relation to something, and in something.[244] For a blow is what produces it. That is why indeed it is impossible for a sound to come about when there is [just] one thing. For the thing doing the striking and the thing being struck are distinct. So what makes a sound makes a sound in relation to something. A sound, though, does not come about without movement, while, as we said, a blow to any random things is not a sound.[245] For wool produces no sound if it is struck, whereas bronze does, and things that are smooth and hollow. Bronze does so because it is smooth, whereas hollow things, by reverberation, produce many blows after the first, because what is moved [namely, the air inside] is unable to escape.

Further, sound is heard in air, and also in water, although less so. It is not the air or the water that is in control of sound, however, but rather there must be a blow by solid things to one another and to the air.[246] And this happens when air remains after being struck and is not dispersed. That is why if it is struck rapidly and forcefully it makes a sound. For the movement of the one doing the striking must be too rapid for the air to disperse, just as if someone were to strike a blow to a heap—or rather a whirl—of sand that is in rapid motion.[247]

An echo, on the other hand, comes about when, from air that has become one because a container delimits it and prevents it from being dispersed, air is made to bounce back like a ball.[248] It seems likely, though, that an echo always comes about although not a distinctly audible one, since what happens in the case of sound is surely just like what happens also in the case of light. For light is always reflected (for otherwise there would not be light everywhere, but instead there would be darkness outside the sunlit area), although it is not reflected as it is from water or bronze or anything else that is smooth, so as to produce a shadow, by which we define the light.[249]

What is void is correctly said to be in control of hearing.[250] For the air seems to be a void, and it is this that produces hearing, when it is moved as one continuous thing. But because of its loose texture it makes no sound unless what is struck is smooth.[251] For then at the same time it becomes one because of the surface, since the surface of a smooth object is one.

What has a sound, then, is what can cause a movement in air that is one by continuity and that reaches up to the organ of hearing. But the organ of hearing has connate air.[252] And because this organ is in air, when the air outside is moved, the air inside is moved. That is why the animal does not hear in every part of it, nor does the air enter every part. For it is not in every part that it has air, but the part that is going to be moved and is animate.[253]

The air alone, then, is soundless because it is easily dispersed; but when it is prevented from being dispersed, its movement is sound. The air inside the ears, though, has been walled in so as to be unmoving, in order that it may perceive in exact detail all the differentiae (*diaphora*) of movement.[254] That is why we hear also in water, because the water does not enter the connate air itself. On the contrary, it does not even enter the ear itself, because of its spiral shape. When this does happen, there is no hearing. Nor is there if the ear drum is injured, just as with the cornea of the eye. But it is no indication of whether we hear or not that the ear always has an echo, like a horn.[255] For the air that is in the ears is always moving with a movement that is properly its own. But sound belongs to something else and is not its own. And that is why people say that we hear with what is void and echoes, because we hear with what has air confined within it.

Is it what is struck or what does the striking that makes a sound? Or is it in fact both, albeit in distinct ways? For sound is the movement of something that can be moved in the way in which things bounce back from a smooth surface when someone strikes it.[256] Not everything, then, as has been said, makes a sound when it is struck or does the striking—for example, if a needle strikes against a needle. On the contrary, what is struck must be even, so that the air may as a single mass bounce back and vibrate.

The differentiae (*diaphora*) of things that have sounds are made clear in the sound when it is active. For just as without light colors are not seen, so too, without sound, the sharp and the dull are not heard.[257] Sounds are said to be these, however, by transference from tangible objects. For the sharp moves the perceptual capacity a lot in a little time, whereas the dull moves it a little in a lot of time.[258] Not, of course, that the sharp is rapid and the dull slow, but rather that in the one case, because of the rapidity, the movement comes to be of such a character, and in the other, because of the slowness.[259] And it seems that there is some analogy with the sharp and dull where touch is concerned. For the sharp as it were stabs, while the dull as it were pushes, because the one causes movement in a short time, the other in a long one, so that it comes about that the one is rapid and the other slow.

About sound, then, let these be our determinations.

Voiced sound is a sort of sound, one belonging to something animate. For nothing inanimate has a voice, although such things may be said by similarity to have a voice—for example, the pipe, the lyre, and whatever other inanimate things have pitch-variation, melody, and articulation.[260] For there is a likeness because voice also has these things. But many animals do not have a voice—for example, those that are bloodless and, among those that have blood, fish. And this is quite reasonable, if indeed sound is a sort of movement of air. But those fishes that are said to have a voice—for example, those in the Achelous—make a sound with their gills or some other such part.[261] But voiced sound is sound characteristic of an animal, and not one made by any random part.

But since everything that makes a sound does so because something strikes, strikes something, and does so in something, and this last is air, it is quite reasonable that the only things to make a voiced sound are those that receive air. For nature uses what is already breathed in for two functions. For just as it uses the tongue both for tasting and for articulation (of which tasting is necessary, which is why it also belongs to more things, whereas articulation is for the sake of wellbeing), so too it uses breath both for the internal heat as something necessary (the cause will be stated elsewhere), and also for voice, so that there may be wellbeing.[262]

The instrument for breathing is the pharynx, and what this part is for the sake of is the lung. For it is due to this latter part that footed animals have more heat than others.[263] But what is first to need the [effects of] breathing is in fact the region around the heart.[264] That is why it is necessary that air should be breathed in and enter. And so the blow struck on the so-called windpipe by the air that is breathed in is voice. For, as we have said, not every sound made by an animal is voice (for it is possible both to make a sound with the tongue and as people do in coughing), but what does the striking must be animate, and must involve some sort of imagination.[265] For voice, of course, is a sort of sound that has signification, and is not, like a cough, the sound of the air that is breathed in. Instead, it is with this air that [the animal] strikes the air in the windpipe against the windpipe itself. An indication of this is that we cannot use our voice when breathing in or breathing out, but [only] when holding our breath. For the one holding his breath causes the movement with this. It is evident too why fish are voiceless, since they have no pharynx. And they do not have this part because they do not receive air or breath in. The cause of this is a topic for another account.[266]

II 9

About odor and the smellable it is less easy to make determinations than about the things already discussed. For it is not so clear what sort of thing odor is as it is with sound or color. The cause of this is that this perceptual capacity, as we have it, is not exact but is inferior to that of many animals. For a human is a poor smeller and perceives none of the objects of smell unless they are painful or pleasant, because the perceptual organ is not exact. It is quite reasonable to suppose that it is also in this way that the hard-eyed animals perceive colors, and that the differentiae (*diaphora*) of the colors are not clear to them except insofar as they cause or do not cause fear. And this is the way the human race (*genos*) is with regard to odors.

It would seem, indeed, that while smell is analogous to taste, and similarly the kinds (*eidos*) of flavor to those of odor, human taste is more exact because it is a sort of touch, and this perceptual capacity is most exact in a human being.[267] For in the others he is inferior to many animals, but in touch he is much more exceedingly exact than the rest. That is why he is also the wisest of the animals.[268] An indication of this is that members of the human race (*genos*) are naturally well-disposed or naturally ill-disposed depending on this perceptual organ and on no other, since the hard-fleshed ones are naturally ill-disposed for thought, whereas the soft-fleshed ones are naturally well-disposed.[269] And just as flavors are sweet or bitter, so too are odors. But some things have an odor and flavor that are analogous, I mean, for example, a sweet odor and a sweet taste, whereas others have ones that are contrary. Similarly too an odor may be pungent, bitter, sharp, or savory. But, as we have said, because odors are not very distinguishable in the way that flavors are, they have taken their names from the latter in accord with a likeness in the things.[270] For sweet odor is named from saffron or honey, while pungent odor is named from thyme, and the same way in the other cases.

Smell is just like hearing and each of the other perceptual capacities in that as hearing is of the audible and the inaudible, and sight of the visible and the invisible, so smell is of what has an odor and what is odorless. The odorless comprises what cannot possibly have an odor at all and what has little or faint odor.[271] Similarly too with what is said to be tasteless.

Also, smell comes about through a medium—for example, air or water. For aquatic animals also seem to perceive odor, regardless of whether they have blood or are bloodless, as do those that live in air. And in fact some of them come from a great distance to get their nourishment, guided by the odor.

That is why there appears to be a puzzle: [1a] If all animals smell in the same way, whereas the human being smells when inhaling, and when, instead of inhaling he is exhaling or holding his breath, does not smell (whether the object is distant or near, or even if it is placed on the inside of the nostril), and [1b] if the fact that something placed on the perceptual organ itself is incapable of being perceived is common to all animals, but being incapable of perceiving [odor] without inhaling is special to human beings, as is clear to those who test it, it follows that [1c] bloodless animals, since they do not breathe, would have some other perceptual capacity beyond those mentioned. But [2] that is impossible, if indeed they perceive odor. For the perception of odor, both foul-smelling and sweet-smelling, is smell. And further they appear to be destroyed as a result of the same strong odors as a human being is—for example, bitumen, sulfur, and the like.[272] They must smell, then, but without inhaling.

It seems, though, that in human beings this perceptual organ differs from that in the other animals, just as their eyes do from those of hard-eyed animals. For humans have eyelids as a protection and a sort of sheath, and if they do not move and open these, they do not see. But hard-eyed animals have nothing of this sort, but see immediately whatever comes about in the transparent. In the same way, then, in some animals the perceptual organ of smell is uncovered, like the eye, whereas in those that receive air it has a covering, which is removed when they inhale, by dilation of the veins and passages. And that is why animals that breathe do not smell in water. For it is necessary for them to have inhaled in order to smell, and it is impossible to do this in water. For odor belongs to what is dry, just as flavor does to what is wet, and the perceptual organ of smell is potentially like that.[273]

II 10

The tasteable is a sort of tangible thing. And that is the cause of its not being perceptible through the medium of a foreign body, since it is not so with touch either. And again the body in which the flavor is present—namely, the tasteable—is in what is moist as matter. And this is a sort of tangible thing. That is why, even if we lived in water, if something sweet were thrown in, we would perceive it. But our perception of it would not be through a medium, but would be due to the mixture of it with the moist, as in the case of a drink. Color, by contrast, is not seen in this way, namely, by its being mixed in, nor by effluences.[274] There is nothing, then, serving as medium. But as color is the visible, so flavor is the tasteable. Nothing, though, produces a perception of flavor without moisture, but either actually or potentially it has moisture—for example, salt.[275] For it dissolves easily and acts as a solvent on the tongue.

Just as sight is of the visible and the invisible (for darkness is invisible but sight also discerns this) and, further, of the excessively bright (for this is also invisible, but in another way from darkness), so too hearing is both of sound and silence, of which one is audible and the other inaudible, and of very loud sound as sight is of brightness (for just as a faint sound is inaudible so in a way is a loud or violent one), and as one thing is said to be entirely invisible (as with other cases of impossibility), while another is said to be so if it is natural for it to be visible but it is not visible or slightly visible (just as with the footless and the kernel-less)—so too in that way, then, taste is both of the tasteable and the tasteless, the latter being what has little flavor or slight flavor or is destructive of taste.[276] The drinkable and the undrinkable, though, seem to be a starting-point (for of both there is a sort of taste), but the latter is bad and destructive of taste, whereas the former is in accord with nature; and the drinkable is an object common to touch and taste.[277]

But since the tasteable is moist, it is also necessary for its perceptual organ to be neither actually moist nor incapable of being moistened. For taste is affected in some way by the tasteable insofar as it is tasteable. What is necessary, therefore, is the moistening of something that is capable of being moistened while being preserved, but which is not itself moist—and this is the perceptual organ of taste. An indication of this is the fact that when it is very dry the tongue does not perceive anything nor does it do so when it is very moist. For in the latter case there is contact with the moisture that is there first, as when someone who has first tasted a strong flavor tastes another, and as to sick people all things seem bitter because they perceive them with a tongue full of bitter moisture.[278]

The kinds (*eidos*) of flavor, as in the case of colors, are contraries when simple, namely, the sweet and the bitter.[279] And next to the sweet is the savory and to the bitter the salty, and intermediate between these come the pungent, the harsh, the astringent, and the sharp. These seem to be pretty much all the differentiae (*diaphora*) of flavor. So what is capable of tasting something is potentially such, while the tasteable is what is capable of making it actually such.

II 11

Where the tangible and touch are concerned the same account applies. For if touch is not one perceptual capacity but more than one, then the objects perceptible by touch must also be of more than one sort. But there is a puzzle about whether it is more than one or one, and about what the perceptual organ is of what can perceive by touch, whether it is flesh, and what is analogous to this in other beings, or whether it is not, but instead the flesh is the medium, whereas the primary perceptual organ is something else that is internal. For every perceptual capacity seems to deal with one pair of contraries—for example, sight with white and black, hearing with high and low pitch, and taste with bitter and sweet. But in the tangible there are many pairs of contraries—hot/cold, dry/moist, hard/soft, and whatever others are of this sort.

But there is a sort of resolution at any rate to this puzzle, namely, that with the other perceptual capacities too there is more than one pair of contraries—for example, in vocal sound there is not only high and low pitch, but also loudness and softness, smoothness and roughness of voice, and others of this sort. And there are other differentiae (*diaphora*) of this sort also where color is concerned. But what the one thing is that is the underlying subject for touch in the way that sound is for hearing is not clear.

As to the question of whether the perceptual organ is internal, or is not internal but is instead immediately the flesh, it seems to be no indication of this that the perception comes about at the same time as touching does. For even as things stand, if we were to make a sort of membrane and stretch it around the flesh, this would immediately on being touched report the perception in the same way. And yet it is clear that the perceptual organ is not in this membrane. And if it were actually to become naturally conjoined [with the flesh], the perception would pass through even more quickly. Hence the body that is of this sort [namely, flesh] seems to have the same character as air would have if it were naturally conjoined with us all around. For then we would have seemed to perceive sound, color, and odor with one thing, and sight, hearing, and smell would have seemed to be one perceptual capacity. But as things stand because what the movements pass through is discontinuous with us, it is evident that the aforementioned perceptual organs are distinct.

In the case of touch, however, this is—as things stand—unclear. For the animate body cannot be composed of air or water, since it must be something solid. It remains, then, for it to be mixed from earth as well as from these, as flesh and what is analogous to it tends to be. So it is necessary for the body to be the naturally attached medium for what can perceive by touch, and for its perceptual capacities—though more than one—to operate through this. That they are of more than one sort is made clear by touch in the case of the tongue. For it perceives all tangible objects with the same part as it does flavors. If, then, the rest of our flesh also perceived flavor, taste and touch would have seemed to be one and the same perceptual capacity. But as things stand they are two, because they are not interchangeable.

But someone might raise the following puzzle. If every body has depth, and this is the third dimension, and if intermediate between two bodies there is a third body, then it is not possible for the two to touch each other. But what is moist is not without body, neither is what is wet on the surface, but it must either be or contain water. And things that touch each other in water, since their extremities are not dry, must have water intermediate between them, with which their extremities are flooded. But if this is true, then it is impossible for one thing to touch another in water. And it is the same way in air too. (For air stands to the things in air as water does to the things in water. But this more escapes our notice, just as it more escapes the notice of aquatic animals whether the things that touch each other are wet.) The question is, then, whether the perception of all objects comes about in the same way, or that of distinct things comes about in distinct ways, just as it now seems that taste and touch perceive by touching, whereas the other perceptual capacities do so from a distance.

What seems so, however, is not the case. On the contrary, we perceive even what is hard and what is soft through other things, just as we do what has a sound, what is visible, and what has an odor. But the latter are farther away, the former close at hand, which is why it escapes our notice, since we do indeed perceive all things through a medium, but in these cases it escapes our notice. And yet, as we also said earlier, even if we perceived all the objects of touch through a membrane without noticing that it intervened, we would be in the same position as we now are in water and in air.[280] For it seems to us now that we touch the things themselves and nothing through a medium.

But there the tangible differs from what is visible and what has a sound, in that we perceive the latter because the medium acts on us, whereas we perceive what is tangible not as a *result of* the medium but rather *at the same time as* the medium, like a man who is struck a blow through his shield. For it is not that the shield having been first struck then strikes the man a blow, but rather what happens is that both are struck at the same time.

On the whole, then, it seems that as air and water are to sight, hearing, and smell, so the flesh and the tongue are to their perceptual organ as each of these is. And when the perceptual organ itself is touched, neither in the one case nor in the other can perception take place—for example, if someone were to place a white body on the surface of the eye. From which it is also clear that what can perceive the tangible is internal. For it would be just like what happens in the case of the other perceptual capacities. For we do not perceive things placed on the perceptual organ, but we do perceive what is placed on the flesh. So the flesh is the medium of what can perceive by touch.

It is the differentiae (*diaphora*) of body insofar as it is body that are objects of touch. I mean the differentiae (*diaphora*) that determine the elements, namely, hot, cold, dry, and wet, of which we have spoken earlier in our account of the elements.[281] The perceptual organ for these, in which the perceptual capacity called "touch" primarily belongs, is the part that is potentially such as they are. For perceiving is a sort of being affected, and so what does the affecting makes that part such as it is actually, the part being such potentially. That is why we do not perceive what is equally as hot, cold, hard, or soft [as the part], but only the excesses, the perceptual capacity being a sort of mean between the pairs of contraries in the perceptible objects. And that is why it discerns the perceptible objects. For the mean is capable of discerning, since in relation to each extreme it becomes the other.[282] And just as what is to perceive white and black must be neither of them actively, although both potentially (and similarly too in the case of the other perceptual capacities), so in the case of touch it must be neither hot nor cold.

Further, just as sight, as we saw, was of the visible and in a way of the invisible, and just as the rest of the perceptual capacities too were similarly of opposites, so touch is of the tangible and the intangible—where the intangible consists of what has to a very minor degree the differentiae (*diaphora*) of tangible objects, as is the case with air, and of the excessive tangible things, such as those that are destructive [of the perceptual capacity].[283]

We have now spoken about each of the perceptual capacities in outline.

II 12

Speaking in universal terms about every perceptual capacity, though, we must suppose that the perceptual capacity is what can receive the perceptible forms without the matter, as wax receives the seal of the signet-ring without the iron or the gold—it takes on a golden or brazen seal, but not insofar as the seal is gold or bronze. Similarly too the perceptual capacity for each [sort of object] is affected by what has color, flavor, or sound, but not insofar as each is said to be things in question, but insofar as each is of such-and-such a sort, and in accord with the ratio.[284] The primary perceptual organ is that in which a capacity of this sort exists. It is the same [as the capacity], but the being [for it] is distinct. For what does the perceiving would be a spatial magnitude, but surely neither the being for what is capable of perceiving nor the perceptual capacity is a spatial magnitude, but rather a sort of ratio and capacity of the former thing.[285]

It is evident from this why it is that excesses in perceptible objects destroy the perceptual organs (for if the movement is too strong for the perceptual organ, the ratio is dissolved—and this, as we saw, is the perceptual capacity—just as the consonance and pitch [of a lyre] are if the strings are struck too forcefully).[286] And also why it is that plants do not perceive, although they have a part of soul, and are affected by tangible objects (for in fact they are cooled and heated). For the cause of this is their not having a mean, nor a starting-point of a sort that can receive the forms of perceptible objects; on the contrary, they are affected [by the form] along with the matter.[287]

But someone might raise a puzzle as to whether what is incapable of smelling can be affected in any way by odor, or what is incapable of seeing by color, and similarly in the other cases. If, though, the smellable is odor, then, if it produces anything, it is smelling that odor produces. So none of those things that are incapable of smelling can be affected by odor (and the same account applies in the other cases), nor can any of the ones that are capable except insofar as each is capable of perceiving [the relevant thing]. At the same time, this is also clear from the following. It is not light and dark or sound or odor that produces any effect on bodies, but rather it is the things in which these perceptible objects are present—for example, it is the air that accompanies the thunder that splits the wood. Tangible objects and flavors, on the other hand, do affect bodies. For otherwise by what would inanimate things be affected and altered? Will these other objects, then, produce some effect? Or is it the case that not every body is affected by smell and sound, and are those that are affected indeterminate and such as not to remain where they are—for example, air (for air gives off odor as if it had been affected)? What then is smelling beyond being affected? Or is smelling also perceiving, whereas the air when affected quickly becomes perceptible?

Book III

III 1

That there is no perceptual capacity beyond the five (I mean by these sight, hearing, smell, taste, and touch), anyone may be convinced on the basis of the following considerations. For [1] if even as things stand we have perception of everything for which touch is the perceptual capacity (for all the affections of the tangible insofar as it is tangible are perceptible to us by touch); and [2] if indeed when we lack any perceptual capacity we must also lack some perceptual organ; and [3] if all the things that we perceive by touching them ourselves are perceptible by touch, which is a perceptual capacity we in fact have, whereas all those we perceive through media without touching the things themselves we perceive by means of the simple bodies (I mean, for example, air and water); and if it is the case that [4a] two perceptible objects that are distinct in genus (*genos*) from each other are perceived though one [simple body], then a being possessed of a perceptual organ of this sort must be capable of perceiving both (for example, if the perceptual organ is composed of air, and air is the medium for both sound and color), whereas [4b] if there is more than one medium for the same perceptible object (for example, air and water for color, since both are transparent), then even a being possessed of [a perceptual organ composed of] only one of them will perceive whatever is perceptible through both; and [6] if perceptual organs are composed of two of these simple bodies only, namely, air and water (for the eye-jelly is composed of water, the organ of hearing of air, and the organ of smell of one or the other of these), whereas fire either belongs to none or is common to all (for nothing is capable of perceiving without heat), and earth either belongs to none or is most of all a constituent especially connected to touch; then it would follow that there is no perceptual organ outside those composed of water and air, and these some animals possess even as things stand, with the result that all the perceptual capacities are possessed by those animals that are not either incomplete or disabled (for it is evident that even the mole has eyes under its skin); so [7] if there is not some other [simple] body or some affection possessed by none of the bodies that exist here, then no perceptual capacity will be left out.[288]

But neither, however, can there be some special perceptual organ for the common perceptibles, which [, then,] we perceive coincidentally by means of each perceptual capacity—for example, movement, rest,

shape, magnitude, number, and oneness.[289] For we perceive all these by
movement (for example, magnitude by movement, and so also shape,
for shape is a sort of magnitude, rest by non-movement, number by
negation of continuity) and by the special objects (for each perceptual
20 capacity perceives one).[290] So it is clear that it is impossible for there
to be a special perceptual capacity for any of these—for example, for
movement.[291] For in that case it would be the way it is now when by
sight we perceive the sweet. This we do, because [1] we happen to have
perceptual capacities for both [color and sweetness], by which, when
they occur together at the same time, we know them. But if not, [2] we
would perceive them in no other way than coincidentally, as we per-
25 ceive the son of Cleon not because he is the son of Cleon but because
he is pale, and this the son of Cleon happens to be. But for the common
perceptibles we already have a perceptual capacity that is common, not
coincidentally.[292] There is, therefore, no special perceptual capacity for
them. For then we would not perceive them in any other way than the
way just mentioned that we see the son of Cleon.[293]

The perceptual capacities, however, perceive each other's special
30 objects coincidentally, not insofar as they are the perceptual capacities
they are but insofar as they are one, whenever the perception comes
about at the same time in relation to the same thing—for example, in
425b1 relation to bile that it is bitter and yellow (for it is certainly not for any
other perceptual capacity to state that both are one). That is also why
we may be deceived, and if something is yellow, we may think that it
is bile.

For the sake of what, though, we might inquire, do we have several
perceptual capacities instead of only one? Or is it in order that the
5 accompanying common perceptibles should less escape our notice—
for example, movement, magnitude, and number? For if there was
only sight, and it was of white, they would more escape our notice, and
all things would seem to be the same because of color and magnitude
accompanying each other at the same time. But as things stand, since
the common perceptibles belong in the objects of another perceptible
capacity as well, this makes it clear that each of them is something
10 distinct.[294]

III 2

Since we perceive that we see and hear, it must either be by sight that someone perceives that he sees or by a distinct [perceptual capacity].[295] But in the former case the same one will be for perceiving sight and for perceiving its underlying color. So either there will be two for perceiving the same thing or one will be for perceiving itself. Further, if the perceptual capacity that is for perceiving sight were indeed another one, either they will go on without limit or one will be for perceiving itself. So one should grant this in the case of the first perceptual capacity.

But there is a puzzle. For if to perceive by sight is to see, and what is seen is color or what has color, then if someone is to see the thing that sees, the primary thing that sees will also have color.[296] It is evident, accordingly, that to perceive by sight is not one thing. For even when we do not see, we discern darkness and light by sight, although not in the same way. Further, even the thing that sees is in a way colored. For each perceptual organ is receptive of the perceptible object without the matter. That is why perceptions and appearances remain in the perceptual organs even when the perceptible objects are gone.

The activity of the perceptible object, however, and of the perceptual capacity is one and the same (although the being for them is not the same).[297] I mean, for example, the active sound and the active hearing. For it is possible to have hearing and not to hear, and what has a sound is not always making a sound. But when what can hear is active and what can make a sound is making a sound, then the active hearing comes about at the same time as the active sound, and we might say that the one is an act of hearing and the other a making of a sound. **426ᵃ1** If, then, the movement—that is, the producing of an effect and the being affected—is in the thing being acted upon, then both the active sound and the active hearing must be in what is potentially hearing. For the activity of what produces and causes movement comes about in the thing that is affected. That is why it is not necessary for what moves something to be itself moved. The activity of what can make a sound, then, is a sound or a making of a sound, while that of what can hear is hearing or an act of hearing.[298] For hearing is twofold, and so is sound.

The same account also applies to the other perceptual capacities and perceptible objects. For just as the acting and the being affected are in what is being affected and not in what is acting, so both the activity of the perceptible object and of the perceptual part are in the perceptual part. But in some cases they are named, for example, the making of a sound and the act of hearing, whereas in other cases one or the other is nameless. For the activity of sight is said to be seeing, while that of color is nameless, and that of taste is tasting, while that of flavor is nameless.

Since, though, the activity of the perceptible object and of the perceptual part are one, although the being is not the same, it is necessary for hearing and sound that are said to be such in this [active] way to be destroyed and to be preserved together, and so also with flavor and tasting, and similarly with the others. But when these are said to be such potentially this is not necessary.

The earlier physicists, however, did not speak well about this, since they thought that there was neither white nor black without seeing, nor flavor without tasting.[299] For though in one way they spoke correctly, in another way incorrectly. For since perception and the perceptible object are spoken of in a twofold way, on the one hand as potential and on the other as active, what they said holds of the latter but not of the former. They, though, spoke in a simple way about things that are not spoken of in a simple way.

But if voice is a sort of consonance, and voice and hearing are in a way one (while in another way not one and the same), and if consonance is a ratio, then hearing must also be a sort of ratio.[300] And that is why each sort of excess, whether high or low pitch, destroys hearing, and similarly excesses in flavor destroy taste, and in colors the intensely bright and dark destroy sight, and in smell the strong odors, whether sweet or bitter, since the perceptual capacity is a sort of ratio.[301] That is also why things—for example, the sharp, sweet, or salty—are pleasant when, being pure and unmixed, they are brought into the ratio, since they are pleasant then.[302] And in general a mixture, a consonance, is more pleasant than either high or low pitch, and for touch what can be [further] heated or cooled.[303] The perceptual capacity is a ratio, and excessive things dissolve or destroy it.

Each perceptual capacity, then, is of its underlying perceptible subject, is present in the perceptual organ insofar as it is a perceptual organ, and discerns the differentiae (*diaphora*) of the underlying perceptual subject—for example, white and black in the case of sight, sweet and bitter in that of taste. And similarly in the case of the others. But since we discern white and sweet and each of the perceptible objects in relation to each, by what do we perceive that they are also distinct?[304] It certainly must be by perception, since they are perceptible objects. (From this it is clear too that flesh is not the ultimate organ of perception, since then it would be necessary for what discerns things to discern them when it itself is touched.[305])

Nor indeed is it possible to discern by separated things that sweet is distinct from white, but both must be clear to some one thing, since otherwise even if I perceived the one and you the other, it would be clear that they were distinct from each other. Instead, one thing must state that they are distinct (for sweet and white are distinct).[306] The same thing, therefore, states this; so that, as it states, so too it understands and perceives.[307]

It is clear, then, that it is not possible to discern separated things by separated things—and not at separated times either, as is clear from the following. For just as the same thing states that good and bad are distinct, so also when it states that the one and the other are distinct, the "when" is not coincidental (by "coincidental" I mean, for example, when I say now that that they are distinct, but not that they are distinct now). Instead, it states now that they are that way now—at the same time, therefore. So it is something inseparable [into parts] and discerns in a time that is inseparable [into parts].

But surely it is impossible for the same thing to be moved with contrary movements at the same time, insofar as it is indivisible and is moved in an indivisible time. For if something is sweet it moves perception or understanding in one way, whereas what is bitter moves it in a contrary way, and what is white in another way. Is it the case, therefore, that what discerns is both indivisible in number and inseparable [into parts], while the being for it is separated [into parts]?[308] It is, then, in one way that what is divisible perceives divided things at the same time, but in another way it is this, insofar as it is indivisible, that does so, since the being for it is divisible, but in place and in number it is indivisible.[309]

Or is this not possible?[310] For the same indivisible thing admits of contraries potentially, whereas the being for it does not, rather it becomes divided by being activated. And it cannot possibly be white and black at the same time, so that it cannot be affected at the same time by the forms of these, if perceiving and understanding are like this.[311] On the contrary, it is like what they call a point: in the way in which it is one and two, in this way it is [both indivisible] and divisible.[312] Now insofar as it is indivisible, what discerns is one and discerns at one and the same time, but in the way in which divisibility belongs to it, it uses the same seal twice at the same time.[313] In the way, then, in which it uses the limit twice it discerns two separate things in a way separately, whereas in the way in which it uses it as one it discerns one thing and at one and the same time.[314]

Let the starting-point, then, in virtue of which we say that an animal is capable of perceiving, be determined in this way.

III 3

There are, though, two differentiae (*diaphora*) by which people most of all define the soul, namely, movement with respect to place and understanding, thinking, and perceiving. But thinking and understanding seem like a sort of perceiving (for in both of these the soul discerns and knows one of the beings). Indeed the ancients say that thinking and perceiving are the same. Empedocles, for example, said "Cunning increases in men in relation to what is present to their senses" and elsewhere "Whence they always find their thinking too presenting other things."[315] And Homer's "Such is the mind of men" means the same thing.[316] For all of these people take understanding to be corporeal, like perceiving, and both perceiving and thinking to be of like by like, as we determined at the start of our account.[317] Yet at the same time they should also have spoken about error, since it is something that 427b1 more properly belongs to animals, and the soul spends more time in this condition. That is why it is necessary either, as some say, that all appearances are true, or that error consists in contact with the unlike, since this is contrary to knowing like by like.[318] But both error and scientific knowledge seem to be the same with respect to contraries.[319] That perceiving and thinking, then, are not the same is clear, since all animals have a share of the former, but few of the latter.[320]

And understanding—in which there is a correctly and an incorrectly (for doing so correctly is wisdom, scientific knowledge, and true belief, and doing so incorrectly is the contrary of these)—is not the same as perceiving either.[321] For the perception of the special perceptibles is always true and belongs to all animals, whereas it is possible to think things falsely as well [as truly], and thinking belongs to no animal that does not also have reason.[322] For imagination is distinct from both perception and thought, and this does not come about without perception, and without it there is no supposition.[323]

But it is also evident that it is not the same as supposition. For the former is up to us [to have], whenever we wish (for it is possible to produce something before our eyes, as is done by those who put things in a mnemonic system and make a mental image of it), but believing is not up to us, since of necessity it is done falsely or truly.[324] Further, when we believe that something is terrible or frightening we are immediately affected in the corresponding way, and similarly if it is something reassuring. With imagination, by contrast, our state is just like that of people looking at terrible or reassuring things in pictures.[325] (There are also different sorts (*diaphora*) of supposition itself, namely, scientific knowledge, belief, wisdom, and the contraries of these, but the difference (*diaphora*) between these is for another account.[326])

Where understanding is concerned, since it is distinct from perceiving, and since on the one hand imagination and on the other supposition seem to belong to it, we must define the imagination before going on to discuss the other.[327] If, then, imagination is that in virtue of which we say that some appearance comes about in us, and if we are not speaking metaphorically, is there some one capacity or state of these in accord with which we discern and grasp truth or falsity?[328] Perception, belief, scientific knowledge, and understanding are of this sort.[329]

Now, that it is not perception is clear from the following. For while perception is either a capacity or an activity, such as sight and seeing, things can appear to us when neither of these is present—for example, the ones in dreams.[330] Next, perception is always present but not imagination. But if they were the same in activity, it would be possible for all beasts to have imagination, whereas it seems not to be so—for example, ants and bees do, but grubs do not.[331] Next, perceptions are always true, whereas most appearances are false.[332] Next, we do not say, when we are activating [our perceptible capacities] in an exact way regarding a perceptible object, that it *appears* to us to be a human, but rather when we do not perceive it clearly, and then our perception may be true or false.[333] *And*, just as we were saying before, visible objects appear to us even when we have our eyes closed.

But then again neither will imagination be any of those things that always grasp the truth—for example, scientific knowledge or understanding. For imagination can also be false. It remains, then, to see whether it is belief. For belief too may be true or false. But conviction follows upon belief (for it is not possible to believe the things we believe without being convinced of them), and while none of the beasts has conviction, many have imagination.[334] Further, every case of belief implies conviction, conviction implies being persuaded, and persuasion implies reason, and while some beasts have imagination, none has reason.[335]

It is evident, therefore, that imagination will be neither belief together with perception, nor belief due to perception, nor a combination of belief and perception, both because of the foregoing considerations and because it is clear that belief will be about nothing other than that object, if indeed it exists, which is also the perceptible object.[336] I mean that the combination of a belief about the pale and a perception of the pale will constitute imagination, since it will surely not be constituted from a belief whose object is the good and a perception of the pale. To be appeared to [in imagination], then, will be to believe non-coincidentally just what appears. In fact, though, something can appear *falsely* to us, about which we have at the same time a true supposition. For example, the sun appears to us to be a foot across, although we are convinced that it is bigger than the inhabited world. It follows [on the view we are considering], then, either that we have jettisoned the true belief that we had, even though the thing has remained the same, and we have neither stopped noticing nor been convinced to change, or else, if we still have the belief, it will be necessary for the same one to be true and false.[337] But it could have become false only if the object changed without our noticing.[338] Therefore imagination is not one of these things nor is it constituted from them.

But since when something is moved another thing can be moved by it, and since imagination seems to be a sort of movement and seems not to take place without perception, but rather to take place in things that perceive and to be of those things of which perception is, and since it is possible for movement to come about as a result of the activity of perception, which movement must be like the perception—this movement could neither come about without perception nor could it belong to non-perceiving things, and it is possible for what has it to do and be affected by many things in accord with it, and for it to be either true or false.

This happens because of the following things: Perception of the special perceptibles is true or has the least possible degree of falsity. Second, though, [there is the perception] of the coinciding of these, the things that coincide with the perceptibles, and here it is now possible to be in error.[339] For about the fact that something is pale, perception cannot be false, but about whether this or something else is the pale thing, it can be false. Third, [there is perception] of the common perceptibles, that is, ones that follow along with the coincidental perceptibles to which the special ones belong (I mean, for example, movement and magnitude).[340] And about these now it is most of all possible to be in error in accord with perception.[341]

But the movement that comes about as a result of the activity of perception will be different, namely, the one that results from these three sorts of perception. In fact, the first is true as long as the perception is present, whereas the others may be false whether it is present or absent, and especially when the perceptible object is far away.

If, then, imagination has no characteristics other than the aforementioned ones, but it is what has been described, then imagination will be a movement that comes about as a result of the activity of perception.[342] And since sight is perception to the highest degree, imagination (*phantasia*) derives its name from light (*phaos*), because without light it is not possible to see.[343] And because its objects persist and are similar to perceptions, animals do many things in accord with them, some because they lack understanding (for example, beasts) and others because their understanding is sometimes obscured by feeling, disease, or sleep (for example, human beings).[344]

About imagination, then, what it is and why it is, let this much be said.

III 4

Concerning the part of the soul by which the soul both knows and thinks (whether this is separable or not separable as a spatial magnitude but only in account), we must investigate what its differentia (*diaphora*) is, and how on earth understanding comes about.[345]

Now, if understanding is like perceiving, it would be either a sort of being affected by the intelligible object or something else of that sort. It must be unaffectable, therefore, but receptive of the form, and potentially such as it is, although not the same as it, and as what is capable of perceiving is in relation to the perceptible objects, so the understanding must be in relation to the intelligible ones.[346]

It must, therefore, since it understands all things, be unmixed, as Anaxagoras says, in order that it may master them—that is, in order that it may know them.[347] For something foreign intruding into it impedes and obstructs it. So too it has no other nature than this, that it is potentially something. That part of the soul, therefore, that is called the understanding (and I mean by the understanding that by which the soul thinks and grasps things) is actively none of the beings before it [actively] understands them. That is why it is reasonable that it should not be mixed with the body, since it would then come to be of a certain sort, either cold or hot, or it would have some instrument as the perceptual part does, whereas, as things stand, it has none. Those who say, then, that the soul is a place of forms speak well, except that it is not the whole soul, but the one capable of understanding, and it is not actually but potentially the forms.[348]

That the ways in which the perceptual part and the understanding part are unaffected are not the same is evident from the case of the perceptual organs and the perceptual capacity. For the perceptual capacity is not capable of perceiving after the perceptible object has been too intense—for example, it cannot perceive sound after hearing very loud sounds, nor see nor smell after very intense colors or odors. But **429ᵇ1** when the understanding understands something intensely intelligible, it [afterwards] understands inferior ones not less, but even more.[349] For the perceptual part does not exist without a body, whereas the understanding is separable. And when the understanding becomes each of the [intelligible] things in the way it does when someone is said to have active scientific knowledge (and this comes about when he is capable of activating it through himself), even then it exists potentially in a way, although not in the same way as before it learned or discovered [these]—and then it is capable of understanding through itself.[350]

Since, though, magnitude is distinct from the being for magnitude, and water from the being for water (and so also for many other things, although not for all, since in some cases they are the same), we discern the being for flesh and flesh [itself] by distinct things or by the same thing in distinct states.[351] For flesh does not exist without matter, but, like the snub, is a *this in this*.[352] It is by means of the perceptual part, then, that we discern the hot and the cold, and those things of which flesh is a certain ratio. But it is by something else, either something separable or the way the state of a bent line is in relation to itself when straightened out, that we discern the being for flesh.[353]

Further, in the case of abstract beings the straight is like the snub, since it involves extension. But its essence, if the being for straight is distinct from the straight, is something else—let it be, two.[354] It is by means of a distinct thing, therefore, that we discern it, or by means of the same thing in a distinct state. In general, therefore, the way the things are separable from matter is the way it is too with what concerns the understanding.[355]

But a puzzle arises: If the understanding is something simple and unaffectable, and if it has nothing in common with anything, as Anaxagoras says, how will it understand, if to understand is to be affected in some way (for it is insofar as two things have something in common, that the one seems to affect and the other to be affected)? Further, is it itself intelligible as well? For either everything else will have understanding, if it is not by reference to something else that it itself is intelligible, and if the intelligible is something that is one in form, or it will have something mixed with it that makes it intelligible in just the way other things are.[356]

On the other hand, being affected in virtue of something common has been determined before, namely, that the understanding is in a way the intelligible objects potentially, although it is none actually before it understands [them]—and it is potentially [these] in the same way as there is writing on a wax tablet on which there is nothing actually written.[357] That is just how it is in the case of the understanding. And it is an intelligible object in just the way its intelligible objects are, since, in the case of those things that have no matter, what understands and what is understood are the same, since theoretical scientific knowledge and what is known in that way are the same.[358] (The cause of the understanding's not always [actively] understanding must be investigated later.[359]) In those that have matter each of the intelligible objects is present potentially.[360] So in these understanding will not be present (for the understanding is a capacity to be such things without the matter), but what is intelligible will be present in *it*.[361]

III 5

But since in the whole of nature there is something that is matter for each genus (*genos*) (and this is what is potentially all those things [that are in the genus]), while there is something else that is causal and productive, because of producing them all (which, for example, is the role of a craft in relation to its matter), so in the soul too there must be these differences (*diaphora*).[362] And in fact there is one sort of understanding that is such by becoming all things, while there is another that is such by producing all things in the way that a sort of state, like light, does, since in a way light too makes potential colors into active colors.[363]

And this [productive] understanding is separable, unaffectable, and unmixed, being in substance an activity (for the producer is always more estimable than the thing affected, and the starting-point than the matter), not sometimes understanding and at other times not.[364] But, when separated, this alone is just what it is.[365] And it alone is immortal and eternal (but we do not remember because this is unaffectable, whereas the passive understanding is capable of passing away), and without this it understands nothing.[366]

III 6

The understanding of indivisible things is found in those cases concerning which there is no falsehood, whereas in those in which there is both falsehood and truth, there is already some sort of combination of intelligible objects as into one—as Empedocles said, "as many heads sprouted without necks" and were then combined by love—so too these things that were separate are combined (for example, the incommensurable and the diagonal), and if it is of things that have been or that will be, it understands and combines time in addition.[367] For falsehood always involves combination, since even if [it understands] the pale thing not to be pale, it combines not-pale [with it].[368] (It is possible, though, to say that all these are also cases of division.[369]) But at any rate it is not only false or true that Cleon is pale but also that he was or will be so. And what produces the one thing is in each case the understanding.

But since what is indivisible is twofold, either potentially so or actively so, nothing prevents someone from grasping what is indivisible when his understanding grasps a length (for this is actively indivisible), nor from doing so in an indivisible time, since the time is divisible and indivisible in a similar way to the length.[370] It is not possible, then, to say what he was grasping in each half of the time. For [the part] does not exist before [the whole] gets divided, except potentially. But if he grasps each of the halves separately, then he also divides the time at the same time, and then it is as if they were lengths themselves. But if he grasps the length as composed of both halves, then he does so in the time composed of both halves—things that are indivisible, though, not with respect to quantity, but in form, he understands in an indivisible time and with an indivisible part of the soul.[371] But coincidentally, and not in the way that those things are, the thing by which he understands and the time in which he understands are divisible, but in the way that those things are, indivisible.[372] For there is in these too something that is indivisible, although presumably not separable, which makes the time and the length one. And this in a similar way is in everything that is continuous, as it is in time and length.

A point, on the other hand, and every division, and whatever is in this way indivisible is made clear in the way a lack is.[373] And the same account applies to the other cases (for example, how we know the bad or the black), since we know them in a way by their contrary.[374] But what knows must be potentially [the contrary] and in it [the contraries] must be one.[375] And if to something there is not a contrary of its causes, it knows itself and is an activity and separable.[376]

An affirmation, however, is something [predicated] of something, as too is a denial, and each one is either true or false.[377] By contrast, not all understanding is such, but that of the what-it-is in the sense of the essence is true, and is not something [predicated] of something. However, just as the seeing of a special object is true, but seeing that the pale is a human or not is not always true, so it is also with [understanding] what is without matter.[378]

III 7

431ª1 Active scientific knowledge, however, is the same as its object, whereas potential scientific knowledge is prior in time in the individual, but in general it is not even prior in time.[379] For all things that come to be do so from what is actual.[380]

It is evident, however, that the perceptible object [simply] causes the perceptual part to move from potentially [perceiving] to actively doing so, since the part is not affected or altered.[381] That is why this is a distinct form (*eidos*) from movement. For movement is the activity of what is incomplete, whereas what is activity in the unconditional sense is something else, namely, the activity of what is complete.[382] Perceiving, then, is like bare announcing and understanding, but when [the perceived object] is pleasant or painful, [the soul], as if affirming or denying, pursues or avoids.[383] In fact, to feel pleasure or pain is to be active with regard to the perceptual mean in relation to what is good or bad, as such.[384] Both aversion and desire as active are the same, and the desiring part and the aversive part are not distinct either from one another or from the perceptual one, although the being for them is distinct.[385]

To the understanding soul, however, appearances are like perceptions.[386] And when it affirms or denies good or bad, it avoids or pursues. That is why the soul never understands without an appearance.[387]

But just as the air made the eye-jelly be such-and-such, however, and it in turn something else, and hearing likewise, the last thing is one, and a single mean, but the being for it is manifold.[388] (What the thing is by which it discerns that sweet and hot differ has been stated before, but we should also say the following.[389] It is indeed one thing, but in the way a defining mark is, and, since they are one by analogy and in number, it is with respect to each of them as they are with respect to each other.[390] What then is the difference between puzzling over how it discerns things that are not the same in genus (*genos*) and how it discerns contrary ones—for example, white and black?[391] Accordingly, let A (white) be to B (black) as C is to D, as those are to each other, so that the alternation [namely, A : C : : B : D] also holds.[392] If, then, CA belong to one thing, it will be the case, as for DB too, that they will be one and the same—but the being for them will not be the same, and similarly for those others.[393] And the same account would apply if A were sweet and B white.)

The part that understands, then, understands the forms in the appearances, and, as in the previous cases, what is to be pursued or avoided is distinguished for it, and so, even outside of perception, when it is dealing with appearances, it is moved to pursuit or avoidance.[394] For example, perceiving the beacon, because it is fire, by the common [perceptual capacity], seeing it moving, it recognizes that it is the enemy, but sometimes, by means of the appearances or intelligible objects that are in the soul, it calculates and deliberates about future things on the basis of present ones. And when it [the soul] says, as it does there, pleasant or painful, here it pursues or avoids—and so in cases of action generally.[395] What is unrelated to action too, namely, the true and the false, is in the same genus as the good and the bad, but they differ in that the first is unconditional, the second relative to someone.[396]

As for things said to exist in abstraction, it is as if [the understanding] actively understood the snub not insofar as it is snub, but separately insofar as it is concave, [namely,] without the flesh in which it understood the concavity to be—that is the way it is with mathematical objects, which are not separable, but which it understands as separable, when it understands them.[397]

In general, though, the active understanding is its objects.[398] But whether or not it is possible for the understanding to understand any separated things when it is itself not separated from a spatial magnitude must be investigated later.[399]

III 8

And now, summing up what has been said about the soul, let us say again that the soul is in a way all the beings. For the beings are either perceptible objects or intelligible ones, and scientific knowledge is in a way the scientifically knowable things and perception the perceptible ones. In what way this is so we must inquire.

Scientific knowledge and perception are divided to correspond to the things, the potential to the potential, the actual to the actual. In the soul, the perceptual part and the scientific part are potentially these things, the latter the scientifically knowable ones, the former the perceptible ones. And these must be either the things themselves or their forms. But they are certainly not the things, since it is not the stone that is in the soul but its form. And so the soul is just like the hand. For the hand is an instrument of instruments, so too the understanding is a form of forms, and a perceptual capacity a form of perceptible objects.[400]

But since there is nothing, it seems, that is beyond, separated from, perceptible magnitudes, it is in the perceptible forms that the intelligible objects are found—both those that are spoken of in abstraction and those that are states and affections of perceptible things. And this is why without perceiving, no one could learn or comprehend anything, and when one contemplates, one must at the same time contemplate an appearance. For appearances are like perceptions, except that they are without matter. However, imagination is distinct from affirmation and denial, since truth and falsity involve a combination of intelligible objects. The primary intelligible objects, though, what distinguishes them from appearances? Or are the others not appearances, although they are not found without appearances?[401]

III 9

Since the soul of animals has been defined by two capacities, by the capacity to discern, which is the function of thought and perception, and further by the capacity for causing movement with respect to place, about perception and understanding let the previous determinations suffice—but about what it is in the soul that moves things, we must investigate whether it is some part of the soul, separable either as a spatial magnitude or in account, or whether it is the whole soul, and, if it is some part, whether it is a special one beyond the ones usually spoken about and the ones we have mentioned, or whether it is one of these.[402]

A puzzle at once arises, however, about what way we should speak of parts of the soul and how many there are. For in one way there appear to be an unlimited number, and not only the ones that some people—in distinguishing them—call the rationally calculative part, the spirited part, and the appetitive part, and others the part that has reason and the non-rational part.[403] For in virtue of the differences (*diaphora*) because of which they separate these, there will evidently be other parts too with a greater contrast between them that these, namely, those we have already discussed, the nutritive part, which belongs both to plants and to all animals, and the perceptual part, which could not easily be posited either as non-rational or as having reason. Further, there is the imaginative part, the being for which is distinct from that of all the others, although which of them it is the same as and which it is distinct from involves much puzzlement, if we are to posit separate parts of the soul. And in addition to these there is the desiring part, which would seem to be distinct from all of them both in account and in capacity. And it would surely be absurd to break this up, since in the rationally calculative part there is wish, and in the non-rational part appetite and spirit.[404] And so if the soul is tripartite there will be desire in each part.

To come, then, to the point our account has now reached: what is it that moves the animal with respect to place? For movement involved in growth and withering, which belongs to all, would seem to be caused by what all have, namely, the generative and nutritive part.[405] (Sleep and breathing in and out we must investigate later, since they too involve much puzzlement.[406]) Where movement with respect to place is concerned, though, we must investigate what it is in animals that causes perambulatory movement.[407] Now, that it is not the nutritive capacity is clear. For this movement is always for the sake of something and involves imagination and desire.[408] For nothing that is not desiring or avoiding something is moved, except by force. Further, [if it were the nutritive capacity,] plants would be capable of movement, and would have some part instrumental for this sort of movement.

Similarly, it is not the perceptual part either. For there are many animals that have perception which remain stationary and unable to move to the end of their lives.[409] If, then, nature does nothing pointlessly and leaves out none of the necessary things, except in things that are disabled or incomplete, while the animals of this sort are complete and not disabled (an indication of this being that they can generate offspring and have a prime of life and a withering), then they would have parts instrumental for perambulation.[410]

Nor is it the understanding part—namely, the so-called understanding—that causes the movement.[411] For the theoretical understanding does not get a theoretical grasp on anything doable in action, and says nothing about what is to be avoided and pursued, whereas the movement in question is always one of avoiding or pursuing something.[412] But even when it does get a theoretical grasp on something of that sort, it does not at once urge avoidance or pursuit—for example, it often thinks of something frightening or pleasant, but it does not urge us to be afraid, although our heart is moved, or—if the thing is pleasant—some other part.[413]

Further, even when the understanding does prescribe and thought tells us to avoid or pursue something, we are not moved, but [sometimes] act in accord with our appetites, like a person who lacks self-control.[414] And in general we see that the one who has the craft of medicine does not ipso facto treat anyone, implying that there is something else that has control of acting in accord with scientific knowledge, but not scientific knowledge itself.[415]

Nor does desire have control of the movement in question. For self-controlled people, even when they desire and have an appetite for things, do not do these things for which they have the desire, but instead follow the understanding.[416]

III 10

But apparently at any rate these two things do cause movement, either desire or understanding—if we posit the imagination as a sort of understanding.[417] For many people follow their imaginations against their scientific knowledge, and in the other animals understanding and rational calculation do not exist, although imagination does.[418]

Both of these, therefore, are capable of causing movement with respect to place, namely, understanding and desire—understanding, however, that is of the practical sort, which rationally calculates for the sake of something, and differs from the theoretical sort in respect of the end.[419] And every desire too is for the sake of something. For the object of desire is the starting-point of practical understanding, and the last thing is the starting-point of the action.[420] So it is reasonable that these two things—desire and practical thought—appear to be the causes of movement. For the object of desire moves us, and, because of this, thought causes movement, because its starting-point is the object of desire. Also, when the imagination causes movement it does not cause movement in the absence of desire. There is, then, one thing that causes movement, namely, the desiring part. For if there were two things that caused movement, understanding and desire, they would cause movement in virtue of some common form.[421] But as things stand the understanding evidently does not cause movement without desire (for wish is a desire, and when something is moved in accord with rational calculation, it is moved in accord with wish), and desire causes movement even contrary to rational calculation, since appetite is a sort of desire.

Now understanding is always correct, whereas desire and imagination are both correct and incorrect.[422] That is why what causes movement in every case is the object of desire, which is either the good or the apparent good—not every good, however, but the good that is doable in action.[423] And what is doable in action is what admits of being otherwise.[424]

Evidently, then, it is a capacity of the soul of this sort—the one called desire—that causes movement. For those, on the other hand, who divide the soul into parts, and divide and separate them in accord with their capacities, the parts turn out to be very many—the nutritive part, perceptual part, understanding part, deliberative part, and further the desiring part. For these differ more from each other than do the appetitive and the spirited parts.[425]

Since, however, desires come about that are contrary to each other, but this happens when reason and appetites are contraries, and occurs in beings that have a perception of time (for the understanding urges us to hold back because of the future, whereas appetite [urges us on] because of the pleasant, since the immediate pleasure appears both unconditionally pleasant and unconditionally good, because we do not see the future), what moves us will yet be one in form, namely, the desiring part insofar as it is desiring (but the primary [mover] of all is the object of desire, since it moves things without being moved, by being understood or imagined), although in number there will be more than one mover.[426]

Movement, on the other hand, involves three things: first, the mover; second, that by means of which it moves things; and third, the thing moved. But the mover is twofold, the unmoved one and the one that moves and is moved. The one that is unmoved is the good that is doable in action, and the one that moves and is moved is the desiring part (for what is moved is caused to move insofar as it desires, and active desiring is a sort of movement), while the thing moved is the animal. The instrument by which desire moves it, this now is something bodily—which is why we must get a theoretical grasp on it as included among the functions common to body and soul.[427] But to speak for now in summary form—what moves in an instrumental way is found where a starting-point and an end are the same, as, for example, in a hinge or ball-and-socket joint, since there the convex and concave are respectively the end and the starting-point of movement (that is why the one [the concave socket] remains at rest while the other [the convex ball] moves), the two being distinct in account, but not spatially separate.[428] For everything is moved by pushing and pulling. That is why, just as in the case of a circle [or sphere], so here there must be something that remains fixed, and the movement must have it as starting-point.

In general, then, as we have said, insofar as an animal has a desiring part, so far is it capable of moving itself. A desiring part, however, cannot exist without an imagination, and all imagination is either rationally calculative or perceptual.[429] Hence in the latter the other animals also have a share.

III 11

But we must also investigate what it is that causes movement in the incomplete animals, the ones to which only perception by touch belongs, and whether it is possible for imagination and appetite to belong to them, or not.[430] For pain and pleasure are evidently present in them, and if these are present, they must also have appetite. But how could they have imagination? Or is it that just as they are moved in an indeterminate way, so too these things are present in them—but in an indeterminate way?[431]

Now, perceptual imagination, as we said, also belongs to the other animals, but the deliberative sort exists [only] in the rationally calculative ones (for whether to do this or that is already a work of rational calculation; and we must measure by one [standard], since we are pursuing the greater [good]; and so we must be able to make one appearance that results from many).[432] And this is the cause of these animals

seeming not to have belief, namely, that they do not have the [imagina- 10
tion] that results from a deduction, but this has that.[433]

That is why desire does not have the deliberative capacity, but some-
times defeats and moves wish, whereas sometimes wish does this to it,
just like a ball, one desire does it to the other desire, as when lack of
self-control occurs, but by nature the higher is more ruling and causes
movement.[434] So there are already three spatial movements caused.[435] 15
But the scientific part is not moved, but remains at rest.[436] And since
the one supposition and premise is universal and the other is particu-
lar (for the first says that any man of such-and-such a sort should do an
action of such-and-such a sort, and the second that this is an action of
such-and-such a sort, and I am a man of such-and-such a sort), either
it is the latter belief that produces movement, not the universal one,
or it is both, but the one remains entirely at rest, while the other does 20
not.[437]

III 12

The nutritive soul, then, must be possessed by everything that is alive
and has a soul from its birth until its death. For what has been born
must have growth, a prime of life, and a time of withering away, and
these things are impossible without nourishment. The nutritive capac-
ity must therefore be present in all things that grow and wither away. 25

Perception, on the other hand, is not necessarily present in all living
things, since those things that have a body that is simple cannot have
touch, and neither can those that are not receptive of the forms with-
out the matter.[438] Animals, though, must have perception, and without 30
this nothing can be an animal, if nature does nothing pointlessly.[439] 30a
For all things that are by nature are for the sake of something or will be 31
concomitants of those things that are for the sake of something. Every
body that can perambulate, then, if it did not have perception, would
perish and fail to arrive at its end, which is the function of nature.[440] For
how would it be nourished? For the stationary ones this is indeed pres- **434b1**
ent where they have grown. However, if a body is not stationary and is
generated, it is not possible for it to have a soul and an understanding
that is capable of discerning but not to have perception—indeed, even
if it is not generated.[441] For why would it not have this? For either it
would be better for the soul or for the body, but in fact it would be bet- 5
ter for neither. For the soul would not understand any better and the
body would be no better because of that. No body, therefore, that is not
stationary has a soul without perception.

But then if it *does* have perception, the body must be either simple or mixed. It cannot be simple, however, since then it would not have touch, but it must have this. This is clear from the following. Since the animal is an ensouled body, and every body is tangible, and it is what is perceptible by touch that is tangible, the body of an animal must also be capable of touch, if the animal is to preserve itself. For the other perceptual capacities—smell, sight, and hearing—perceive through other things. But anything that touches things, if it does not have perception of them, will be unable to avoid some of them and take others. And if that is so, it will be impossible for the animal to preserve itself.

That is why taste too is like a sort of touch. For it is concerned with nourishment, and nourishment is a tangible body. Sound, color, and odor, on the other hand, do not nourish, nor do they produce growth or [by their lack] withering. So it is necessary for taste too to be a sort of touch, because it is a perception of what is tangible and nourishing. These perceptual capacities, then, are necessary to the animal, and it is evident that it is not possible for an animal to exist without touch.

The others, though, are for the sake of the good and are necessary not now to any random kind (*genos*) of animal—although in some (namely, the perambulatory kind) their presence is necessary. For if a perambulatory animal is to preserve itself, it must perceive not only by touching but also from a distance. And this would be the case if it had the capacity to perceive through a medium, the latter being affected and moved by the perceptible object, and the animal by the medium. For just as when what moves something with respect to place makes it change to a certain extent, and what has pushed something else makes the latter push as well, the movement occurs through an intermediate, and just as the primary mover pushes without being pushed, and only the last is pushed and does not push, whereas the intermediate is both, so it is too in the case of alteration, except that things are altered while remaining in the same place. For example, if someone presses into wax, the wax is moved to the extent that he presses, whereas stone is not moved at all, and water is moved to a further extent. Air, however, is moved to the greatest extent, and acts and is acted upon, if it remains in place as one thing.[442]

That is why in the case of reflection too it is better to say not that sight issuing [from the eye] is reflected back, but that the air—to the extent that it is one thing—is affected by shape and color.[443] But over a smooth surface it is one thing, which is why it in turn moves sight, just as if the seal [pressed] into the wax were to pass on to the extent of reaching the limit.[444]

III 13

It is evident that the body of an animal cannot be simple—I mean, for example, composed of fire or of air. For without touch it cannot have any other perceptual capacity, since every ensouled body is capable of touch, as we have said.[445] Now all the other elements, except earth, could come to be perceptual organs, but they all produce perception by perceiving through something else and through media, whereas touch involves touching things, which is why indeed it has this name. And yet even the other perceptual organs perceive by touch, but through something else, whereas touch alone seems to do so through itself. So none of these other elements could compose the body of an animal.

Nor, then, can it be composed of [just] earth. For touch is as it were a mean between all tangible objects, and its perceptual organ is receptive of not only the differentiae (*diaphora*) of earth but also of heat and cold and all the other tangibles.[446] And this is why we do not perceive with our bones, hair, or other such parts, namely, that they are composed of earth. It is also because of this that plants have no perceptual capacity at all, namely, that they are composed of earth. Without touch, though, no other perceptual capacity can be present, and its perceptual organ is composed neither of earth nor of any of the other elements.

It is evident, accordingly, that this is the only perceptual capacity with the loss of which an animal must die. For it is not possible for anything to have this if it is not an animal, nor is there any besides it that something must have to be an animal. And this is why the other perceptible objects (for example, color, sound, and odor) do not in excess destroy the animal but only the perceptual organs—except coincidentally, such as when a push or a blow takes place at the same time as the sound); and by dint of visible objects or an odor other things are caused to move which destroy by touch. And flavor too destroys only insofar as it is at the same time capable of touch.[447] But excess in tangible objects—for example, hot ones, cold ones, or hard ones—does away with the animal. For excess in every perceptible object does away with the perceptual organ, so that in the case of tangible objects it does so to touch, which is what the animal is defined by. For it has been shown that without touch it is impossible for an animal to exist. That is why excess in tangible objects destroys not only the perceptual organ but also the animal, because this is the only one that it must have.

The other perceptual capacities, as was said, the animal has not for the sake of being but for the sake of wellbeing. For example, it has sight in order to see, since it lives in air or water, or, in general, in what is transparent; it has taste because of what is pleasant and painful, in order that it may perceive these in food, have appetite, and be moved; and it has hearing so that something may be signified to it, and a tongue so that it may signify something to another.[448]

Notes

BOOK I

Note 1

Knowing (*eidêsin*): *Eidêsis* is a rare word for knowledge in general. It is used by Aristotle only here.

Noble (*kalôn*): The adjective *kalos* is often a term of vague or general commendation ("fine," "beautiful," "good"), with different connotations in different contexts: "The contrary of *to kalon* when applied to an animal is *to aischron* ['ugly in appearance'], but when applied to a house it is *to mochthêron* ['wretched'] and so *kalon* is homonymous" (*Top.* I 15 106^{a}20–22). (1) Even in this general sense, however, *kalos* has a distinctive evaluative coloration suggestive of "order (*taxis*), proportion (*summetria*), and definiteness (*hôrismenon*)" (*Met.* XIII 3 1078^{b}1), making a term with aesthetic connotation, such as "beauty," seem a good equivalent: to bear the stamp of happiness someone must have *kallos* as opposed to being "very ugly (*panaischês*)" (*NE* I 8 1099^{b}3–4; also *Pol.* V 9 1309^{b}23–25). Moreover, just as a thing need not have a purpose in order to be beautiful, a *kalon* thing can be contrasted with a purposeful one: a great-souled person is one "whose possessions are more *kalon* and purposeless (*akarpa*) than purposeful and beneficial" (*NE* IV 3 1125^{a}11–12). At the same time, it seems wrong to associate *kalon* with beauty in general, since to be *kalon* a thing has to be on a certain scale: "greatness of soul requires magnitude, just as *to kallos* ('nobility of appearance') requires a large body, whereas small people are elegant and well proportioned but not *kaloi*" (IV 3 1123^{b}6–8); "any *kalon* object . . . made up of parts must not only have them properly ordered, but also have a magnitude which is not random. For what is *kalon* consists in magnitude and order (*taxis*)" (*Po.* 7 1450^{b}34–37; also *Pol.* VII 4 1326^{a}33–34). It is this requirement that makes "nobility" in its more aesthetic sense a closer equivalent than "beauty."

In ethical or political contexts, the canonical application of *kalon* is to ends that are intrinsically choiceworthy and intrinsically commendable or praiseworthy (*epaineton*): "Of all goods, the ends are those choiceworthy for their own sake. Of these, in turn, the *kalon* ones are all those praiseworthy because of themselves" (*EE* VIII 3 1248^{b}18–20). It is because ethically *kalon* actions are intrinsically choiceworthy ends that a good person can do virtuous actions because of themselves (*NE* II 4 1105^{a}32) and for the sake of what is *kalon* (III 7 1115^{b}12–13). What makes such actions choiceworthy (VI 1 1138^{a}18–20) and praiseworthy (II 6 1106^{b}24–27), however, is that they exhibit the sort of order (X 9 1180^{a}14–18), proportionality (II 2 1104^{a}18), and determinateness (II 6 1106^{b}29–30, IX 9 1170^{a}19–24) that consists in lying in a mean (*meson*) between two extremes. This brings us full circle, connecting what is ethically *kalon* to what is aesthetically noble, lending the former too an aesthetic tinge.

Estimable: See *DA* I 2 404^{b}4n.

Exactness (*akribeian*): In his focal discussion of *akribeia*, Aristotle makes clear that a science's degree of it is measured along three different dimensions: "One science is more *akribês* than another, and prior to it, if [1] it is both of the facts and gives their explanation, and not of the facts separately from giving the scientific knowledge of their explanation; or if [2] it is not said of an underlying subject and the other is said of an underlying subject (as, for example, arithmetic is more *akribês* than harmonics); or if [3] it proceeds from fewer things and the other from some additional posit (as, for example, arithmetic is more *akribês* than geometry). By from an additional posit I mean, for example, that a monad is substance without position and a point is substance with position—the latter proceeds from an additional posit" (*APo.* I 27 87^{a}31–37). The upshot is thus twofold. First, the most *akribês* version or formulation of a science is the most explanatory one—the one consisting of demonstrations from starting-points. Second, of two sciences, formulated in the most *akribês* way, one is more *akribês* than the other if it demonstrates facts that the other deals with but does not demonstrate. Because a natural science has to posit sublunary matter in addition to such starting-points, the strictly theoretical sciences (theology, astronomy, and mathematics) are more *akribês* than any natural science. Hence it is among these that the most *akribês* one will be found. And it will be the one that explains what the others treat as a fact or undemonstrated posit.

The association of *akribeia* with demonstration from starting-points makes "exact" seem a good translation of it, as does its association with abstraction (mathematics), with what we think of as pure (solid geometry) as opposed to applied sciences (mechanics), and with the idea that the *akribeia* of a science or type of argument depends on its subject matter (*NE* I 3 1094^{b}24). As applied to craftsmen and their products, *akribês* comes closest to meaning "refinement" or "finish" or "sophistication." Applied to perceptual capacities, such as seeing or smelling (*DA* II 9 421^{a}10), it means "discriminating." Applied to virtue and nature, it may have more to do with accuracy—hitting a target (*NE* II 5 1106^{b}14–15)—as it may when applied to definitions (VIII 7 1159^{a}3) or distinctions (II 9 1107^{b}15–16) or units of measurement (*Met.* X 1 1053^{a}1). *Top.* II 4 111^{a}8–9 offers *saphês* ("perspicuous") as an equivalent: "it is well to replace a word with a better-known equivalent, for example, instead of *akribês* in describing a supposition, *saphês*."

Note 2

It seems, too, that to truth as a whole, knowledge of the soul makes a great contribution: Aristotle recognizes two (relevant) kinds of truth, theoretical and practical—the former being "truth in agreement with correct desire" (*NE* VI 2 1139^{a}27–31). Knowledge of the soul contributes to this, because the practical science with the most control, which is politics or political science (*politikê*), has to draw on knowledge of the soul in order to make laws that effectively promote the virtue and happiness of beings that have souls (I 13 1102^{a}18–26).

The soul is as it were a starting-point (*archê*) **of living things:** An *archê* ("starting-point," "first principle") is a primary cause: "This is what it is for something to be a starting-point, namely, that it is itself the cause of many things, with nothing above it being a cause of it" (*GA* V 7 788^{a}14–16). See also II 412^{a}10n(5).

Living things (*tôn zô[i]on*): *Zôon* often means "animal," as opposed, for example, to *phuton* ("plant"), but since plants too have souls (*DA* II 2 413^{a}25–^{b}8) both terms often have a more general connotation and are equivalent in meaning to "living thing" or "animate thing."

Note 3

Get a theoretical grasp on (*theôresai*): The verb *theasthai*, with which *theôria* is cognate, means to look at or gaze at. Hence *theôria* itself is sometimes what someone is doing in looking closely at something, or observing, studying, or contemplating it. *Theôria* can thus be an exercise of understanding (*nous*), which is the element responsible for grasping scientific starting-points (I 1 402^{b}12–13n), such as (the definition of) right angle in the case of geometry, or (the definition of) soul in the case of psychology. Hence the cognate verb *theôrein* sometimes means "to be actively understanding" or "to be actively contemplating" something. "Get a theoretical grasp on" often seems to convey the right sense.

The nature (*phusis*) **of the soul:** (1) In the "primary and full way" a being that is or does something by nature has a nature—an internal starting-point of "movement and rest, whether with respect to place, growth and withering, or alteration" (*Ph.* II 1 192^{b}13–15). The world of nature, investigated by natural science, is a world of such beings, all of which have perceptible matter as a constituent (*Met.* VI 1 1025^{b}30–1026^{a}6). This world is roughly speaking the sublunary one. Beyond it lies the world of the heavens studied by astronomy and theology (1026^{a}7–22), where beings either have no matter, or matter of a different sort (VII 10 1036^{a}9–12). Although, strictly speaking, these beings do not have natures, Aristotle nonetheless speaks of them as if they do, as he does here of the soul, which is only partly natural (Introduction, pp. xxvii–xxix). We use the term "nature" in a similar way when we speak of the nature of the numbers or the nature of fictional entities, not meaning to imply at all that these things are parts of the natural world (compare *Met.* XII 4 1078^{a}10). (2) Sometimes, instead of using *phusis* to refer to the or a *phusis of* X, Aristotle uses the term and its plural *phuseis* to mean something we translate as "a nature" (Greek has no indefinite article) or "natures." The thing or things referred to may or may not have natures in the strict sense; they are pretty much just entities of some sort. (3) Aristotle also speaks of *phusis* or *hê phusis* in agentive terms—for example, when he says, as he frequently does, that nature does nothing pointlessly (for example, *DA* II 5 415^{b}16–17, III 9 432^{b}21, 12 434^{a}31, *PA* I 1 641^{b}12–29).

And its substance (*ousia*): *Ousia* is a noun formed from the present participle *ousa* of the verb *einai* ("to be"). "Substance" is the traditional translation. (1) The *substance of* something (the sense relevant here) is its *to ti ên einai* or essence (II 1 412^{b}11n). (2) *A substance*, on the other hand, is something that has the fundamental sort of being possessed by an ultimate subject of predication, which is not itself ever predicated of anything else (*Met.* V 8 1017^{b}23–26)—a particular human being and a particular horse are examples (*Cat.* 5 2^a11–14). It is usually but not always clear which of (1) or (2) is intended.

All the coincidents belonging to it: A standard Aristotelian contrast is between what has an attribute B coincidentally or contingently (*kata sumbebêkos* or *per accidens* in Latin), making the attribute a coincident of it, and what has that attribute intrinsically or non-contingently (*kath' hauto* or *per se*) (*Met.* V 18 1022^a24–36). Attributes that belong to something, such as the soul, contingently are of no interest to a science of it, since they cannot be demonstrated to hold of it, and all science is demonstrative (VI 2 1026^b3–5). But some coincidents are demonstrable and so are of interest to science. These are the intrinsic coincidents or *per se* accidents—"the coincidents connected to the substances" (*DA* I 1 402^b18)—that are not parts of a thing's substance or essence, but are demonstrable from it, as having internal angles equal to two right angles is demonstrable from the definition of a triangle's essence (*APo.* I 7 75^b1, 22 83^b19, *Met.* V 30 1025^a30–32, XIII 3 1078^a5–9).

Some of which seem to be special (*idiôn*) **attributes of the soul:** "A special attribute (*idion*) is one that does not make clear the essence of a thing yet belongs to that thing alone and is predicated convertibly of it. Thus it is a special attribute of human to be capable of learning grammar, since if someone is human he is capable of learning grammar, and if he is capable of learning grammar he is human" (*Top.* I 5 102^a18–22).

Note 4

The what-it-is (*to ti esti*): When we ask, *Ti esti A*? we ask, What is A? The correct answer defines or makes clear the what-it-is of A, or—a related notion—the being for A, or—another related notion—the essence of A. Any intrinsic being, regardless of its category, has a what-it-is, although not all in the same unconditional way (*Met.* VII 4 1030^a17–27).

Method of inquiry (*methodos*): A *methodos* is a *tropos tês zêteseôs*—a way of inquiry (*APo.* I 31 46^a32–^{b}36). *Hodos* means "route" or "road."

Demonstration (*apodeixis*): A scientific deduction or syllogism. See II 1 412^a10n(6).

Note 5

Division (*diairesis*): Division is a way of defining what something is by dividing its genus and differentiae in a specific way: "We should first investigate definitions that are by division. For there is nothing else in the definition except the genus that is mentioned first and the differentiae; the other genera are in fact the first one along with the differentiae combined with it. The first, for example, may be animal, the next two-footed animal, and next again featherless two-footed animal, and similarly if it is accounted for through more differentiae. And in general it makes no difference whether it is accounted for through many or through few—nor, therefore, whether through few or through just two. And of the two one is differentia and the other genus—for example, in the two-footed animal, the animal is genus and the other differentia. . . . But in addition the division should take *the differentia of the differentia*—for example, the footed is a differentia of animal, and next again we should know the differentia of the footed animal insofar as it is footed. So we should not say that of the footed there is on the one hand the feathered and on the other the featherless, if indeed we are to speak correctly (on the contrary, it is through lack of ability that we will say this), but, rather, that there is on the one hand the cloven-footed and on the other the not cloven-footed. For these are differentiae of foot. For the cloven-footed is a sort of footed. And we should try to proceed always in this way until we reach the undifferentiated [species]. At that point there will be precisely as many species of foot as there are differentiae, and the footed animals will be equal in number to the differentiae. If, then, this is how things stand, it is evident that the ultimate differentia is the substance and the definition of the thing, if indeed we should not state the same thing many times in the definitions, since that would be wasted work. And this is certainly what does happen. For when we say two-footed footed animal we have said nothing other than animal with feet with two feet. And if we divide this too by a proper division, we shall be saying the same thing several times over—as many times as there are differentiae. If, then, we take a differentia of a differentia, one differentia—the ultimate one—will be the form and the substance. But if we divide coincidentally—for example, if the footed were divided into the pale and the dark—there will be as many differentiae as there are cuts. Thus it is evident that the definition is the account composed of the differentiae, or, if it is in accord with the correct procedure, from the ultimate one" (*Met.* VII 12 1037^{b}27–1038^{a}30).

Puzzlement (*aporias*): "A dialectical problem (*problêma*) is a subject of inquiry . . . about which [1] people have no belief either way, or [2] on which the many have a belief contrary to that of the wise, or [3] the wise contrary to that of the many, or [4] about which the members of either of these classes disagree among themselves. . . . Problems also occur [5] where deductions conflict, since there is an *aporia* about whether the thing holds or not, because there are strong arguments on both sides. They occur, too, [6] where we have no argument because they are so vast, and we find it difficult to give an explanation—for example, is the universe eternal or not? For one may also inquire into problems of that sort" (*Top.* I 11 104^{b}1–17). A problem is a *puzzle*, then, just in case [5] there are strong arguments on one side and strong arguments on the other.

Note 6

A this something (*tode ti*) **and a substance:** *Tode ti* involves a particularizing element and a generalizing element. I take the demonstrative pronoun *tode* as particularizing (as suggested by *Met.* VII 4 1030^{a}5–6) and the indefinite pronoun *ti* as generalizing, but since *tode* need not be particularizing and *ti* may be, it is possible to go the other way and translate as "thing of a certain sort." Often *tode ti* appears in translations simply as "a this." (1) In very many cases, as in the present one, being a *tode ti* is a distinctive mark of *ousia* ("substance"), and so has some share in the ambiguity of the latter, as between (1a) an ultimate subject of predication and (2a) the substance or essence of something. This is reflected in the fact that (1b) a particular man and a particular horse are primary substances (*Cat.* 5 2^{a}11–14), so that "it is indisputably true that each of them signifies a *tode ti*" (3^{b}10–12), while at the same time (2b) what is separable and a *tode ti* is "the shape or form of each thing" (*Met.* V 8 1017^{b}24–26; also VIII 1 1042^{a}27–29, IX 7 1049^{a}35, XII 3 1070^{a}11,

DA II 1 412^{a}7–9). Some things, to be sure, are one and the same as their forms or essences—which would remove the ambiguity at least in their cases—but it is not true that all are (*Met.* VII 11 1037^{a}33–^{b}7). (3) As strong as the connection between substance and being a *tode ti* is the disconnection between being a *tode ti* and being a universal—"no common thing signifies a this something but, rather, a such-and-such sort of thing" (III 6 1003^{a}8–9; also VII 13 1039^{a}15–16)—and the connection between being substance and being a *kath' hekaston*: "If we do not take the substances to be separated, and in the way that among the beings the *kath' hekasta* are said to be, one will do away with the substance as we wish to say it [of things]" (XIII 10 1086^{b}16–19). Apparently, then, a form that is (2b) a primary substance—as some are explicitly said to be (VII 7 1032^{b}1–2)—must be a *kath' hekaston.* (4) A *kath' hekaston*, in turn, is "what is numerically one" (III 4 999^{b}34–1000^{a}1), and so, (4a) taking "numerically one" to mean that no two things can be one and the same *kath' hekaston*, as no two things can be you or Socrates (VII 14 1039^{a}34), it is translated as "particular"—the argument in VII 15 1040^{a}27–^{b}1 hinges crucially on *kath' hekaston* having this sense. But is also possible to take "numerically one" to mean (4b) "indivisible" or "individual," so that like an ultimate differentia—identified with form and substance at 12 1038^{a}25–26—something is *kath' hekaston* because it cannot be further divided or differentiated.
The categories that have been distinguished: See II 1 412^{a}10n(7).

Note 7

One of those beings that are potentially (*dunamei*): The term *dunamis* (plural: *dunameis*) is used by Aristotle to capture two different but related things. (1) As in ordinary Greek, it signifies a power or capacity something has, especially to move something else (productive *dunamis*) or to be moved by something else (passive *dunamis*). (2) It signifies a way of being, namely, potential (*dunamei*) being as opposed to actual (*entelecheia[i]*) or active (*energeia[i]*) being. Context usually makes clear which is intended.
Or whether is rather (*mallon*) **a sort of actuality** (*entelecheia tis*): *Entelecheia*, which is mostly used as a synonym of *energeia* ("activity") but with a slightly different connotation, is an Aristotelian coinage: *energeia* is action, activity, and movement oriented; *entelecheia*—as the *tel-* suggests—is end or *telos* or completion (*enteles*) oriented (*Met.* V 16 1021^{b}24–30). The dative or adverbial form *entelecheia[i]* is translated as "actual" or "actually." The *entelecheia of* is translated as "the actualization of." The term *energeia* is also an Aristotelian coinage, which I have translated as "activation," when it is being predicated of something, and as "activity," when it is not. The dative or adverbial form *energeia[i]* is translated as "active" or "actively," in order to signal its relation to *energeia*. The etymology of the coinage is unclear, but Aristotle is explicit that it has been extended from movement to other things (*Met.* VIII 1 1046^{a}1–2, 3 1047^{a}30–32), and relates it to another term with an *erg-* root, namely, *ergon*: "The *ergon* ('function,' 'work') is the *telos* ('end'), and the *energeia* is the *ergon*, and that is why the name *energeia* is said [of things] with reference to the *ergon* and extends to the *entelecheian* ('actuality')" (8 1050^{a}21–23). Putting all this together: the activation or actualization of X is an

activity, which is X actually, which is X achieving its end, which—since "the for-the-sake-of-which is the function" (B (III) 2 996^{b}7)—is X fulfilling its function.

Energeia occurs in early works such as the *Protrepticus*, which speaks of the *energeia* of understanding (B24, 86, 91), contrasts living *kata dunamin* with living *kat' energeian* (B79), the single *energeia* of simple beings with the multiple *energeiai* of complex ones (B64), identifies full being with *energeia* (B83, 86), and refers to "complete and unimpeded *energeia*" as having enjoyment included within itself (B88). It continues to be used for these and related purposes throughout Aristotle's works, in fact, where it occurs 671 times, almost five times as often as *entelecheia*, which occurs 138 times. This makes it natural to wonder why, with *energeia* already at his disposal, Aristotle bothered to introduce an entirely new term with a very similar application. One suggestion is that the need stems from psychology. Aristotle has to distinguish (a) a dead animal from an animate one and (b) a dormant or sleeping live animal from an active or awake one. *Energeia* recommends itself for (b). But how, then, to distinguish the level of activity in (a) that constitutes the possession of a soul? That is where *entelecheia* comes in: the soul is "the first *entelecheia* of a natural body that has instrumental parts" (*DA* II 1 412^{a}27–^{b}6). This may well be true, but it is interesting that in a case where *energeia* seems yet more unfortunate in its connotations, Aristotle uses it anyway: "What is stillness? Quietness in a large quantity of air. The air is matter; the quietness is *energeia* and substance" (*Met.* VIII 2 1043^{a}23–24). In fact, he also uses it for the soul, which is the *energeia* of a certain sort of body (3 1043^{a}35–36).

Note 8

Whether all souls are of the same form (*homoeidês*): The term *homoeidos* is applied to air (*DA* I 5 411^{a}21), water (*Met.* V 3 1014^{a}30–31), and fire (*Cael.* I 8 276^{b}5–7), whose parts are the same in form as the whole, but also to members of the same species (*Met.* VII 7 1032^{a}24, XII 5 1071^{a}17).

And if not, whether they differ in species or in genus: "What is distinct in species is distinct from something, in something, and this latter thing must belong to both—for example, if an animal is distinct in species [from another], then both are animals. Hence [two] things that are distinct in species must be in the same genus. For this is the sort of thing I call a genus, that by reference to which both are said to be one and the same, and which is not coincidentally differentiated, whether as matter or otherwise" (*Met.* X 8 1057^{b}35–1058^{a}2).

Note 9

Account (*logos*): A *logos* in Greek is a word or organized string of words constituting an account, argument, explanation, definition, principle, argument, reason, or piece of reasoning, discussion, conversation, or speech; what such words or their utterances mean, express, or refer to, such as the ratio between quantities (*NE* V 3 1131^{a}31–32); the capacity that enables someone to argue, give reasons, and so on (*Pol.* VII 13 1332^{b}5). Aristotle also uses the word in a more technical sense: "A *logos* is a significant voiced sound some part of which is significant when separated—as an annunciation (*phasis*), not as an affirmation (*kataphasis*). I mean, for example, that human signifies something, but not that the thing is or is not (though it will be an affirmation or denial if something is added); the single syllables of human, by contrast, signify nothing" (*Int.* 4 16^b26–31). Here a *logos* is in particular a scientific definition.

The universal, being either nothing or posterior: The universal would be nothing if there were no universal to which the souls of things in different species all belonged. In this case "soul" would be homonymous or ambiguous, like "bank" or "key": there is no universal that all banks—riverbanks, savings banks—instantiate. It would be posterior, if knowledge of the universal soul were not possible until after all the various sorts of soul had been defined.

God (*theou*): Aristotle recognizes the existence of a number of different divine beings or gods, among which he distinguishes a primary god, referred to as *ho theos* ("the god"), which is the prime unmoved mover on which everything else depends (*Met.* XII 7–10). Here *theos* refers to the kind to which all these gods belong.

The universal (*katholou*): "A universal is naturally such as to belong to many things" (*Met.* VII 13 1038^b11–12). It is thus something common (*koinos*) to all of them.

Note 10

Similarly if there is any other common thing predicated: The meaning is not entirely clear. It could mean that we can raise the question (1) about anything predicated in common of (or universally of) any set of things or (2) about anything predicated in common of all souls.

Note 11

Whether we should inquire into the parts first or their functions (*erga*): A function (*ergon*) is (1) an activity that is the use or actualization of a state, capacity, or disposition; (2) a work or product that is the further result of such an activity (*NE* I 1 1094^a5–6). It is intimately related to its possessor's end or final cause: "The function is the end, and the activity is the function" (*Met.* VIII 8 1050^a21–22); "each thing that has a function is for the sake of its function" (*Cael.* II 3 286^a8–9). Moreover, a thing's good or doing well "seems to lie in its function" (*NE* I 7 1097^b26–27). But this holds only when the thing itself is not already something bad (*Met.* VIII 9 1051^a15–16). Finally, a thing's function is intimately related to its nature, form, and essence. For a thing's nature is "its for-the-sake-of-which" (*Ph.* II 2 194^a27–28), its form is more its nature than its matter (II 1 193^b6–7), and its essence and form are the same (*Met.* VII 7 1032^b1–2). Hence "all things are defined by their function" (*Mete.* IV 12 390^a10), with the result that if something cannot function, it has no more than a name in common with its functional self (*Met.* VII 10 1035^b14–25, *Pol.* I 2 1253^a20–25, *PA* I 1 640^b33–641^a6). Functions are thus attributed to a wide variety of things, whether living or non-living. These include plants (*GA* I 23 731^a24–26) and animals generally (*NE* X 5 1176^a3–5), including divine celestial ones (*Cael.* II 3 286^a8–11), parts of their bodies and souls (*PA* II 7 652^b6–14, IV 10 686^a26–29), instruments or tools of various sorts (*EE* VII 10 1242^a15–19), crafts, sciences (II 1 1219^a17), philosophies (*Met.* VII 11 1037^a15) and their practitioners (*NE* VI 7 1141^b10), cities (*Pol.* VII 4 1326^a13–14), and nature itself (I 10 1258^a35).

The perceptual part (*to aisthêtikon*): This is the part by means of which a living thing has the capacity or potentiality to perceive. It consists of a perceptual organ and a perceptual capacity that by its presence in it makes the part functional.

Understanding (*to noein*) **or *the* understanding** (*ho nous*): In the broadest sense of the term, someone with *nous* is someone with sound common sense, and the cognate verb *noein*, like *dianoeisthai*, means "to think" (*Mete.* I 3 340^{b}14, *Ph.* IV 1 208^{b}25, *NE* III 1 1110^{a}11). *Nous*, in this sense, is what enables a soul to suppose, believe, deduce, calculate, reason, and believe, so that it is possible to *noein* something false (*DA* III 3 427^{b}9). In the narrow sense, *nous* is what makes possible a type of knowledge of universal scientific starting-points that, unlike scientific knowledge proper, is not demonstrable from anything further: "About the starting-point of what is scientifically known there cannot be scientific knowledge, . . . since what is scientifically known is demonstrable. . . . The remaining alternative is for *nous* to be of starting-points" (*NE* VI 6 1140^{b}33–1141^{a}8); "*nous* is of the terms or definitions (*horoi*) for which there is no reason (*logos*)" (8 1142^{a}25–26). This *nous* is a divine substance (I 6 1096^{a}24–25, X 7 1177^{b}19–1178^{a}8), or anyway the most divine one in us (X 7 1177^{a}16), and so it alone shares in the immortality that is characteristic of gods (*DA* III 5 430^{a}23). Consequently, it alone of these parts is separable from the human body and can survive its death (I 4 408^{b}18–25; also *Long.* 2 465^{a}26–32). Among sublunary animals *nous* is fully possessed only by we human beings (*PA* II 10 656^{a}7–8, *NE* X 8 1178^{b}24–25). In fact, they are in a way or are most of all their *nous*. See Introduction, pp. xxix–xxxii.

Although classified in these texts as a substance, *nous* is also sometimes classified as a state (*hexis*) of the soul that "grasps the truth by way of affirmation and denial" (*NE* VI 3 1139^{b}15–17). For in its case the distinction between a state and its activation collapses, since it is "in substance [or essence] an activity" (*DA* III 5 430^{a}18), although it must be in touch with an intelligible object in order to grasp the truth about it. See *Met.* XII 7 1072^{b}18–30, notice *eu echei* at 1072^{b}24. On the metaphor of touching, see IX 10 1051^{b}24.

No English term is a precise equivalent for *nous* or *noein* in this narrow sense. "Intellect," which is in many ways the best choice, lacks a cognate verb in current use. "Understanding" is better in this respect but shares with "intellect," "intelligence," "intuitive reason," "apprehension," and other common translations the defect of not being—as *nous* usually is—factive or truth entailing, since it is one of the five states "in which the soul grasps the truth by way of affirmation and denial" (*NE* VI 3 1139^{b}15–17).

Perceiving (*to aisthanesthai*) **or the perceptual part** (*to aisthêtikon*): As in the case of *to noein* and *ho nous*, the contrast is between the function or activity (expressed by the infinitive of the relevant verb) and the part or element in soul (expressed by a noun or adjective) whose function or activity it is.

Note 12

If the functions come first, again a puzzle might be raised about whether we should inquire into the corresponding objects (*ta antikeimena*) **before these:** Namely, the objects that activate the functions (II 4 415^{a}20–22).

The perceptible object (*to aisthêton*): What has the potentiality or capacity to be perceived, or is actually being perceived (II 5 417^{a}13–14).
The intelligible object (*to noêton*): An intelligible object or content (*noêma*) is a form (*eidos*), which may be encoded in an appearance, and can be grasped by the understanding (*nous*) when it contemplates (*theôrein*) that appearance (III 7 431^{a}14–^{b}10). It differs from an appearance in being an affirmation, evaluable as true or false (III 8 432^{a}8–12).

Note 13
The causes (*tas aitias*): The difference between *aitia* (feminine), used here, and *aition* (neuter), which is also frequently used, is that an *aitia* is an explanatory argument (a type of deduction) that identifies causes, whereas an *aition* is an item in the world that is causally efficacious. Aristotle does not systematically observe the distinction, but it is *aitia* that figures in his definitions of craft knowledge and scientific knowledge (*APo.* I 2 71^{b}9–12, II 11 94^{a}20–27).
The coincidents connected to the substances: That is, the intrinsic coincidental attributes entailed by the substances or essences of the relevant things (I 1 402^{a}8n).

Note 14
That is in accord with what appears so (*kata tên phantasian*): Here equivalent in meaning to *to phainomenon* (I 2 404^{a}29n), not to "in accord with imagination." See also I 1 403^{a}9n on *phantasia.*

Note 15
They have all been stated in a dialectical (*dialektikôs*): See Introduction, pp. xxiv–xliv.
And empty way (*kenôs*): What makes a definition empty—that is, empty of empirical or explanatory content—is that even if it is consistent with the reputable beliefs and so can be defended against dialectical attacks, it may be inconsistent with facts that are not reputable beliefs, but that have been scientifically discovered (such as the fact that a certain coincident belongs necessarily to a subject).

Note 16
Affections (*pathê*): What X *paschei* ("suffers" or "undergoes") is what happens to him, so that he is passive with respect to it, as opposed to what he *poiei* ("does as an agent," or "produces"). When Y does something to X, X is affected by it, so his *pathê* as a result are, in one sense, his affections or attributes and, in another, his passions or feelings.

Note 17
Having an appetite for things (*epithumein*): "Appetite is concerned with what is pleasant and what is painful" (*NE* III 2 1111^{b}16–17). Also *DA* II 3 414^{b}5–6.

Note 18
If it [understanding] too is a sort of imagination (*phantasia*), **or does not exist without imagination** (*phantasia*): *Phantasia* often refers in particular to the imagination, though sometimes it refers to a perception-based content of some sort: "the sun appears to be a foot in diameter, though often something else contradicts

the appearance (*phantasian*)" (*Insomn.* 2 460^{b}18–20). At III 10 433^{a}10 imagination is characterized as a sort of understanding and at III 8 432^{a}12–13, the objects of the two are related but distinguished.

Note 19

It will not be separable (*chôristê*): Walking and being healthy are characterized as "incapable of being separated" on the grounds that there is some definite substantial underlying subject of which they are predicated (*Met.* VII 1 1028^{a}20–31). Often, separability is associated with being such a subject: "None of the other things is separable besides the substance, for all of them are said of the substance as of an underlying subject" (*Ph.* I 2 185^{a}31–32). When an underlying subject is said to be simply separable, then, it seems reasonable to infer that what it is *separable from* are the things predicated of it. Such separability is often characterized in terms of ontological independence or independence in being: it is possible for the underlying subject to be without the predicables, but not them without it (*Cat.* 5 2^{a}34–^{b}6, *Met.* V 11 1019^{a}3–4, XIII 2 1077^{a}36–1077^{b}11).

Separable (*chôristê*): Verbals ending in *-ton*—of which *chôriston* is an example (*chôristê* is the feminine)—sometimes have (1) the meaning of a perfect passive participle ("separated") and sometimes (2) express possibility ("separable"). When *chôriston* is applied to substances and treated as their defining mark it seems to be better captured by sense (2).

But will be like the straight (*euthei*), **to which, insofar as it is straight** (*hê[i] euthu*), **many coincidents belong:** "For just as the universal propositions of mathematics are not about separate objects that exist beyond the magnitudes and the numbers, but with magnitudes and numbers, not however insofar as they are such as to have magnitudes or to be divisible, it is clearly possible that there should also be statements and demonstrations concerning perceptible magnitudes, not however insofar as they are perceptible but, rather, insofar as they are of such-and-such a sort. . . . So since it is true to say unconditionally not only that separable things exist but also that inseparable ones do (for example, that movable things exist), it is also true to say unconditionally that the objects of mathematics exist, and that they are such as they are said to be. . . . Many coincidents, though, belong intrinsically to things insofar as they are, each of them, of a certain sort—for example, insofar as the animal is female and also insofar as it is male, there are attributes special to it (yet there is no male or female separate from the animals). So there are also such attributes of things only insofar as they are lengths or insofar as they are planes" (*Met.* XIII 3 1077^{b}17–1078^{a}9).

For example, it will touch a bronze sphere at a point, although, if separated, the straight will not touch it in this way: The straight insofar as it is straight—or qua straight—is the straight considered as an abstract mathematical object that is perfectly straight, like a geometrical straight line. If we consider the straight edge of a ruler in this abstract way, it will touch a bronze sphere, whose surface is being considered in an analogous way, at a point. But if we consider it as separated from the ruler, and so as simply an abstract object, it will obviously not touch the bronze sphere at all, since abstract objects cannot touch material ones. Similarly, if the soul were like the straight, we could establish many scientific truths about it, simply as such, considered in abstraction from the body. But it would not be able to affect any bodies, including the one whose soul it is, except insofar as it itself involved body.

Note 20

Spiritedness (*thumos*): Aristotle sometimes uses *thumos* and *orgê* ("anger") interchangeably (*Rh.* I 4 1369^{b}11) and very often uses *thumos* in contexts where its aggressive side is highlighted (for example, *NE* III 8 1116^{b}15–1117^{a}9). In other places, however, he says that anger is only "in (*en*)" the spirited part (*Top.* II 7 113^{a}36–b1, IV 5 126^{a}10), alongside other feelings, such as fear and hatred (IV 5 126^{a}8–9). In one passage, indeed, he identifies spirit as the source not just of "negative" feelings but also of love and friendship: "spirit (*thumos*) is what produces friendliness (*philêtikon*), since it is the capacity of the soul by which we love (*philoumen*)" (*Pol.* VII 7 1327^{b}40–1328^{a}1). This is in keeping with his claim that if hatred is in the spirited part, then love, as its contrary, must be there too (*Top.* II 7 113^{a}33–^{b}3). Presumably, then, we should think of spirit as passionate—as "hot and hasty" (*NE* VII 6 1149^{a}30)—rather than as always aggressive.

Mild-mannerdness (*praotês*): "Mild-mannerdness is a medial condition concerned with anger (the mean is actually nameless, as pretty much are the extremes, so we transfer the term 'mild-mannered' to the mean, although it leans toward the deficiency, which is itself actually nameless). The excess might be said to be a sort of irascibility (*orgilotês*), since the feeling here is anger (*orgê*), although the things that produce it are many and various" (*NE* IV 5 115^{b}26–31). See also *EE* III 3, *Rh.* II 3.

Note 21

The affections of the soul are enmattered accounts (*logoi enuloi*): Aristotle is not always careful to distinguish linguistic items, such as accounts, definitions, or even phrases or sentences, from their ontological correlates. For example, he speaks of Socrates as not separating "the definitions" from perceptible objects, when it is the forms or essences that are the ontological correlates of the definitions to which he is referring (*Met.* XIII 4 1078^{b}30–31). The present phrase may be a case in point, so that what is being said is that the affections of the soul are enmattered *forms*—or matter-form compounds, as *DA* I 1 403^{b}2–3 suggests. Or, which might simply be another way of saying the same thing, they may be enmattered *ratios* (*logos* can also mean "ratio") in the way that perceptual capacities are said to be (III 2 426^{a}27–^{b}7). It is just possible, however, that the problem lies rather with *enulos*, which is not found elsewhere in Aristotle. For in *Met.* VII 7 1033^{a}4–5 we are told that "the brazen circle does have the matter in its account (*en tô[i] logô[i] tên hulên*)," where the meaning clearly is that the brazen circle has a reference to the matter (the bronze) in its account. If *enulos* has a parallel significance, then *logos enulos* means "accounts that include a reference to matter."

Note 22

Being angry is a sort of movement (*kinêsis tis*) **of such-and-such a sort of body, or of a part or a capacity, as a result of this for the sake of that:** A *kinêsis* is a movement or change that can be, but need not be a spatial movement. In this regard it is like the English verb “move”: contrast “He was moved to Japan” with “He was moved to anger.” Here the *kinêsis tis* of a capacity (or potentiality) is its actualization. **Capacity** (*dunameôs*): See I 1 402^{a}26n.

Note 23

Natural scientist (*phusikos*): “Since natural science too is a science concerned with a particular genus (*genos*) of being (for it is concerned with the sort of substance in which the starting-point of movement and of rest is internal to itself), it is clear that it is neither a practical science nor a productive one. For in the case of producible things the starting-point is in the producer, whether this is understanding or craft or some capacity, whereas in the case of things doable in action it is in the doer, namely, deliberate choice. For what is doable in action and what is deliberately choosable are the same. And so if all thought is either practical or productive or theoretical, natural science would have to be some sort of theoretical science—but a theoretical science that is concerned with such being as is capable of being moved and with the substance that in accord with its account holds for the most part only, because it is not separable” (*Met.* VI 1 1025^{b}18–28).

Note 24

For a dialectician it [anger] is a desire for retaliation or something like that: The dialectician bases his definitions on *endoxa* or reputable beliefs, and so his definitions are like the nominal essence or meaning of the relevant word, since this is something that most users of it would accept. Thus rhetoric, which also bases its arguments on *endoxa*, defines anger as “desire, involving pain, for apparent revenge (*timôrias phainomenês*), because of apparent contempt (*phainomenên oligôrian*) on the part of a person unfitted to treat the person himself, or one of those close to him, with contempt” (*Rh.* II 2 1378^{a}30–32).

Note 25

Or is the natural scientist rather (*alla*) **the one who is concerned with everything that is a function or affection of this sort of body and this sort of matter:** The implied contrast with the previous question (“Or is there not someone who is concerned with the affections of the matter that are not separable and insofar as they are not separable?”), which invites a positive answer, is with the craftsman, who is also concerned with affections of matter insofar as they are not separable: “There are two crafts, though, that rule over the matter and have knowledge of it, the craft concerned with the use and the architectonic one that is concerned with production. That is why the one concerned with the use is also in a way architectonic, but as architectonic it differs from the other insofar as it knows the form, whereas the one concerned with production knows the matter. For the captain knows what sort of form the rudder should have and prescribes its production, whereas the other knows what sort of wood it should be made from and by what movements it will be made. In the case of the products of craft, then, we produce the matter for the sake of the function, whereas with natural things the matter is already present” (*Ph.* II 2 194^{a}36–^{b}9).

Note 26

And aren't those things that are not separable, but are considered insofar as they are not affections of this sort of body and in abstraction from it, the concern of the mathematician? See I 1 403^{a}15n.

Note 27

And insofar as they are separate, that of the primary philosopher: "If there is something that is eternal and immovable and separable, it is evident that knowledge of it belongs to a theoretical science—not, however, to *natural* science (for natural science is concerned with certain moveable things) nor to mathematics, but to something prior to both. For natural science is concerned with things inseparable but not immoveable, while certain parts of mathematics are concerned with things immovable and not separable but as in matter. The primary science, by contrast, is concerned with things that are both separable and immovable. Now all causes are necessarily eternal, and these most of all. For they are the causes of the divine beings that are evident [to perception]. There must, then, be three theoretical philosophies, mathematical, natural, and theological, since it is quite clear that if the divine belongs anywhere, it belongs in a nature of this sort" (*Met.* VI 1 1026^{a}10–21; also XI 7 1064^{b}1–3).

Philosoper: Aristotle sometimes applies the term *philosophia* (or sometimes just *sophia*) to any science aiming at truth rather than action (*Met.* II 1 993^{b}19–21). In this sense of the term, all the broadly theoretical sciences count as branches of philosophy, and *philosophia* is more or less equivalent in meaning to *epistêmê* in its most exact sense. *Philosophia* also has a narrower sense, however, in which it applies exclusively to sciences providing knowledge of starting-points (*Met.* XI 1 1059^{a}18, *NE* VI 7 1141^{a}16–18). It is in this sense that there are just three theoretical philosophies. In addition to these, Aristotle occasionally mentions practical philosophies, such as "the philosophy of human affairs" (*NE* X 9 1181^{b}15). It is among these that his own ethical writings belong (*Pol.* III 12 1282^{b}18–23).

Note 28

In our investigation concerning the soul it is necessary to go through the puzzles from which we must become free as we proceed: "Now for those who wish to be puzzle-free it is useful to go through the puzzles well. For the subsequent puzzle-free condition is reached by untying the knots produced by the puzzles raised in advance, and it is not possible to untie a knot you are unaware of. But a puzzle in thought makes clear the existence of a knot in the subject matter. For insofar as thought is puzzled it is like people who are tied up, since in both cases it is impossible to move forward. That is why we must get a theoretical grasp on all the difficulties beforehand, both for these reasons and because those who inquire without first going through the puzzles are like people who do not know where they have to go. And, in addition, a person [who has not already grasped the puzzles] does not even know whether he has found what he is inquiring into. For to someone like that the end is not clear, whereas to a person who has already grasped the puzzles it is clear. Further, a person is necessarily in a better position to judge when—as if they were opposing parties in a court case—he has heard all the contending arguments" (*Met.* III 1 995^{a}27–^{b}4).

Note 29

Democritus: DK 67–68 = TEGP 516–685.

Note 30

The shapes and atoms are unlimited: "Leucippus and Democritus of Abdera . . . say that the primary magnitudes are unlimited in number and indivisible in magnitude, and that many cannot come to be from one nor one from many, but that by the combination and entanglement all other things come to be" (*Cael.* III 4 303^{a}3–8; also *GC* I 8 325^{a}34–^{b}5).

The shapes: "[Democritus] further posits position, shape, and order, and these are kinds (*genos*) of opposites: in the case of position, above, below, in front, behind; in that of shape, angular, angle-less, straight, curved. . . . So that [he makes] the contraries into starting-points" (*Ph.* I 5 188^{a}23–26).

Note 31

Leucippus: An associate of Democritus and a fellow atomist.

Elements (*stoicheia*): A *stoicheion* was originally one of a row (*stoichos*) of things. Later it was a letter of the alphabet or an element of any complex whole (Plato, *Tht.* 201e). Aristotle uses it in these ways, and to refer to the five primary elemental bodies (earth, water, air, fire, and ether), from which all others are composed. "The primary component of each thing is an element of it" (*Met.* V 3 1014^{b}14–15).

Note 32

Defining mark (*horos*): The root meaning of *horos* is that of a stone marking the boundary or limit of a territory or piece of land in a visible or otherwise perceptible way. Hence the doctor's *horos* is the thing "by reference to which he discerns what is healthy for a body from what is not" (*EE* VII 15 1249^{a}21–22), as here breathing is what we look for in order to tell whether something is alive.

Note 33

Life continues just so long as they are capable of doing this: "In the [surrounding] air there are a large number of those atoms that he calls understanding and soul. When we breathe, then, and the air enters, these enter along with it, and counteract the compression, thus preventing the soul that is present in animals from being squeezed out. And this is why life and death depend on the taking in and letting out of breath. For it is when the compression by the surrounding air gains the upper hand, and the air from the outside can no longer enter and counteract the compression, and breathing is incapable of occurring, that death comes about for animals" (*Juv.* 10 472^{a}6–14).

Note 34

Those who say that the soul is what moves itself tend in the same direction: "All soul is immortal. For what is always in movement is immortal, and what moves something else and is moved by something else, in ceasing from movement, ceases to have life. Only what moves itself, because it does not abandon itself, never stops moving. But it is also source and starting-point of movement for the other things that move" (Plato, *Phdr.* 245c5–9); "What is the account, then, of this thing to which the name 'soul' is given? Do we have any besides what was just now said, 'the movement that is capable of moving itself'?" (Plato, *Lg.* 895e10–896a2).

Note 35

Anaxagoras (of Clazomenae): DK 59 = TEGP 271–325.

Understanding (*nous*) caused the universe to move: "When one person said, then, that understanding was (just as in living things) present in nature too, as the cause of the cosmos and of all order, he seemed like a sober person by contrast with his improbability-uttering predecessors. We know that Anaxagoras explicitly adopted these accounts, but Hermotimus of Clazomenae is 'charged' with speaking that way earlier" (*Met.* I 3 984^{b}15–20). The reference is to DK B12 = TEGP 31 F15.

The universe (*to pan*): *To pan* refers not to the totality of things, but to those in the spatio-temporal realm—the universe. That is why Aristotle can claim that everything (= everything that is a part of the universe) has matter and a moving cause (*Met.* XII 5 1071^{a}33–34)—something that is manifestly false of all substances. For substances, such as the primary god, "must be without matter" (6 1071^{b}20–21).

Note 36

For Democritus soul and understanding are unconditionally the same: Democritus did not distinguish what is true, which is what understanding makes accessible, from what perception makes accessible, and so identified what is true with what seems to perception to be so.

Unconditionally (*haplôs*): The adjective *haplous* means "simple" or "single-fold." The adverb *haplôs* thus points in two somewhat opposed directions. To speak *haplôs* sometimes means to put things simply or in simple terms, so that qualifications and conditions will need to be added later. Sometimes, to be F *haplôs* means to be F in a way that allows for no "ifs," "ands," or "buts." In this sense, some things that are F *haplôs* are F in the strictest, most absolute, and most unqualified way (*Met.* V 5 1015^{b}11–12), so that what is unconditionally F is what is intrinsically F (*NE* VII 9 1151^{b}2–3).

Since what is true is what appears: "Similarly, too, some have come to believe in the truth of appearances on the basis of perceptible objects. For they think it inappropriate to discern the truth by the large or small number [of people who believe it], but that the same thing seems sweet to some who taste it, bitter to others, so that if all were sick or bereft of thought, while two or three were healthy or possessed of understanding, it is these who would be thought to be sick and bereft of thought and not the others. Further, many of the other animals receive appearances contrary to ours concerning the same things, and even for each one of us relative to himself the same things do not always seem the same to perception. Which, then, of these appearances is true or false is unclear. For the one lot is no more true than the other lot, but rather equally so. That is why Democritus at any rate says that either there is no truth or that to us at least it is unclear" (*Met.* IV 5 1009^{a}38–^{b}12).

What appears (*to phainomenon*): *Phainomena* are things that appear (often on the basis of perception) to be so, but that may or may not be so. The corresponding verb *phainesthai* ("appear"), when used with a participle endorses what appears to be so and is translated "it is evident that," and when used with an infinitive neither endorses nor rejects what appears to be so and is translated "appears." When it occurs without a participle or an infinitive, it may either endorse or reject. Things that appear so to everyone or to wise people who have investigated them are *endoxa* or reputable beliefs. The role of both *phainomena* and *endoxa* are discussed at *NE* VII 1 1145^{b}2–7.
Hector lying there thinking altered thoughts (*allophronein*): "A saying of Anaxagoras to some of his companions is also recorded, that 'things would be for them as they supposed them to be.' People say that even Homer evidently held this belief, because he made Hector, when he was stunned by a blow, lie 'thinking altered thoughts,' as if even those bereft of thought are thinking, but not the same thoughts as before. So it is clear that if both are states of thinking, then the beings will be so-and-so and not so-and-so at the same time" (*Met.* IV 5 1009^{b}26–33). The reference is to *Iliad* XXIII.698, where the lines refer to Eurylaus, not Hector.

Note 37

Estimable (*timiois*): To say that something is estimable (*timios*) is to ascribe a distinct sort of goodness or value to it: "By what is estimable I mean such things as what is divine, what is superior (for example, soul, understanding), what is more time-honored, what is a starting-point, and so on" (*MM* I 2 1183^{b}21–23). Thus happiness, as a starting-point of ethics, is "something estimable and complete" (*NE* I 12 1102^{a}2–4). Ordinary people "commonly say of those they find most estimable and most love that they 'come first'" (*Cat.* 12 14^{b}5–7). Something is thus objectively *timios* when—like starting-points and causes—it "comes first by nature" (14^{b}3–5). Since sciences inherit their level of esteem from the kinds of beings they deal with (*Met.* XI 7 1064^{b}3–6), the "most estimable science must deal with the most estimable genus of beings" (VI 1 1026^{a}21–22). That is why things having to do with the gods are particularly estimable (*NE* IV 2 1122^{b}19–21). Finally, because the most exact science provides scientific knowledge of ultimate starting-points and causes, the most estimable science is also the most exact one (*Met.* I 2 982^{a}25–27).

Note 38

Understanding—in the sense of wisdom (*phronêsin*)**—appears not to belong to all animals, or even to all humans:** "Instead of having forelegs and forefeet, a human being has arms and so-called hands. For a human is the only animal that stands upright, and this is because his nature—that is, his substance—is divine. Now the function of that which is most divine is to understand (*noein*) and to exercise wisdom (*phronein*); and this would not be easy if there were a great deal of the body at the top weighing it down, for weight hampers the movement of thought (*dianoia*) and of the common perceptual capacity. Thus when the weight—that is, the body-like quality [of the soul]—becomes too great, the body itself must lurch forward toward the ground; and then, for preservation's sake, nature provides forefeet instead of arms and hands as has happened in quadrupeds . . . because their soul could not sustain the weight bearing it down. . . . In fact, compared with a human, all other animals are dwarf-like [that is, top-heavy]. . . . That is why all animals are less wise (*aphronestera*) than man. Even among human beings, indeed, children . . . though possessing some other exceptional capacity, are inferior in the possession of understanding (*nous*) as compared to adults. The reason . . . is that in many of them the starting-point of the soul is movement-hampered and body-like in quality. And if the heat that raises the organism upright wanes still further and the earthly matter waxes, then the animals' bodies also wane, and they will be many footed; and finally they lose their feet altogether and lie full length on the ground. Proceeding a little further in this way, they actually have their starting-point down below, and finally the head part comes to have neither movement nor sensation and what you have is a plant, which has its upper parts below and its lower parts above; for in plants the roots have the capacity of mouth and head, whereas the seed counts as the opposite, being produced in the upper part of the plant on the ends of the twigs" (*PA* IV 10 686^{a}25–687^{a}2). See also *DA* II 3 415^{a}7–11, III 3 427^{b}8.

Wisdom (*phronêsin*): *Phronêsis* (verb *phronein*) is sometimes used (1) in a broad sense to refer to thought, thinking, or (roughly speaking) intelligence of any sort (as at I 2 404^{a}30, II 9 421^{a}22, *Met.* V 5 1009^{b}13, 30); (2) in a narrower sense to refer to the distinctively practical wisdom discussed in *NE* VI 5; and (3) as equivalent in meaning to *sophia* or theoretical wisdom (*Met.* XIII 4 1078^{b}15 and throughout *Protr.*). Though (2) in its fullest form and (3) are distinctively human possessions, Aristotle does sometimes attribute a sort of practical wisdom (*HA* VII 1 588^{a}18–31) to non-human animals, such as deer, hare, cranes, bees, and ants (*HA* I 2 488^{b}15, IX 5 611^{a}15–16, IX 10 614^{b}18, *PA* II 2 648^{a}5–8, 4 650^{b}18–27, *GA* III 2 753^{a}10–17). What he has in mind here, then, is presumably (3)—compare *DA* II 3 415^{a}11–12, III 3 427^{b}8–14.

Note 39

"For by earth . . . ": DK B109 = TEGP 158 F110. Also cited, though less fully, at *Met.* III 4 1000^{b}6–9. The passage is otherwise unattested.

Note 40

Plato in the *Timaeus* generates the soul from the elements, since like is known by like, and things are composed of the elements: "The components from which he [the Demiurge] made the soul and the way in which he made it were as follows: In between the being that is indivisible and always changeless and the one that is divisible and comes to be in the corporeal realm he mixed a third intermediate kind (*eidos*) of being derived from the other two. Similarly he made a mixture of the *same* and one of the *different* in between their indivisible and their divisible corporeal counterparts. And he took the three mixtures and mixed them together to make a uniform mixture, forcing the *different*, which was difficult to mix, into conformity with the *same*. And when he had mixed these two together with being, and from the three had made a single mixture, he re-divided the whole mixture into as many parts as his task required, each part remaining a mixture or the *same*, the *different*, and being" (*Ti.* 35a1–b3).

Since like is known by like: "Because the soul is a mixture of the *same*, the *different*, and being, . . . because it was divided up and bound together in various proportions, and because it circles around on itself, whenever it comes into contact with something whose being is scatterable or else with something whose being is indivisible, it is stirred throughout its whole self. It then declares what exactly that thing is the same as, or what it is different from, and in what respect, in what manner, or at what time it comes about that they are the same or different and are characterized as such" (*Ti.* 37a2–b3). See also *DA* I 3 406^{b}26–407^{a}2.

Note 41

In *On Philosophy* (*en tois Peri philosophias legomenois*): The reference is probably to Aristotle's own dialogue *On Philosophy*, which is referred to as *en tois Peri philosophias* at *Ph.* II 2 194^{a}36. But it is sometimes taken to refer to lectures that Plato gave. The doctrines mentioned are being attributed to Plato in either case.

It was determined that the animal-itself is composed of the Idea-itself of the one and the primary length, breadth, and depth, and the other things in the same way: The animal-itself is the unique Platonic Form of animal that is "over" the many species of animals: "each of the animals present in the various [species] of animals will be one animal-itself" (*Met.* VII 14 1039^{b}14–15). As such, in Aristotle's view, it is composed of the one and the so-called indefinite dyad of the great and the small: "And since the Forms are causes of the other things, he [Plato] thought that their elements were the elements of all the beings. It is as matter, then, that the great and the small were starting-points, and as substance [or form], the one" (I 6 987^{b}18–21).

The primary length, breadth, and depth: These are the unique Forms of length, breadth, and depth, which are generated from the numbers and the various species of the great and the small: "For some people generate these from the species of the great and the small—for example, lines from the long and short, planes from broad and narrow, and solids from deep and shallow (these being species of the great and small)" (*Met.* XIII 9 1085^{a}9–12; also I 9 992^{a}10–15). Similarly, the "primary surfaces" are the ones generated from the primary lengths or lines (XI 2 1060^{b}13).

Note 42

Understanding is the one, scientific knowledge the two (for it proceeds in a single way toward one thing): Alexander's commentary on *Met.* I 5 985^{b}29–31 gives the flavor of the doctrine—here apparently attributed to Plato: "What resemblances they [the Pythagoreans] said there are in numbers to the beings and the things that come into being Aristotle showed [in his lost treatise *On the Pythagoreans*]. For since they assumed that reciprocity or equality is a property of justice, and found that this was in numbers, they therefore said that justice is the first equal-times-equal [that is, square] number. . . . But some said that this number is the fourth, since, as the first square number, it is divided in equals and is itself equal (for it is twice 2), while others said that it is the ninth number, which is the

first square number from an odd number (3) multiplied by itself" (Alex. *In Metaph.* 38.1 = Dooley, 63–64).
Understanding: See I 1 402^{b}12–13n.
Scientific knowledge: See II 1 412^{a}10n.
Belief is the number of the plane, and perception that of the solid: "Those who posit the Ideas . . . produce spatial magnitudes from matter and number, lines from the two, planes presumably from three, and solids from the four, or from other numbers as well—it makes no difference" (*Met.* XIV 3 1090^{b}20–24).

Note 43

For the numbers, though they are the Forms themselves and the starting-points, are nevertheless generated from the elements: "For generated [as they are] from the great and the small by participating in the one, the Forms are the numbers" (*Met.* I 6 987^{b}21–22). XIII 4 1078^{b}9–12 suggests that the association or identification of Forms with numbers was a later development in the account of Forms. In the dialogues, in any case, the identification is not explicitly stated. In his lost lectures *On the Good*, on the other hand, Plato is thought to have identified the good-itself with the Form number one—a view Aristotle also attributes to him (I 6 988^{a}14, XIV 4 1091^{b}13–15, *EE* I 8 1218^{a}25–30).

Note 44

The numbers are the Forms of these: "[Plato] made use of only two causes, that of the what-it-is and that of the matter (for the Forms are the causes of the what-it-is of other things, as the one is of the Forms). And what the underlying matter is, of which the Forms are said in the case of perceptible objects, and the one in the case of the Forms, is evidently a dyad, the great and the small" (*Met.* I 6 988^{a}8–14).

Note 45

Some thinkers: Namely, Xenocrates of Chalcedon, a follower of Plato, and head of the Academy from 339 to 314 BC.
Declared the soul to be a self-moving number: See I 4 408^{b}32–409^{a}30.

Note 46

People differ with each other, especially those who make them corporeal with those who make them incorporeal: "Some speak of the starting-point as matter, whether they posit one or many, and whether they make it a body or something incorporeal—for example, Plato speaks of the great and the small, and the Italians of the unlimited, Empedocles of fire, earth, water, and air, Anaxagoras of the unlimited number of homoeomerous things. All these thinkers, then, latched onto this sort of cause, and so too did those who spoke of air, fire, water, or something denser than fire and more fine-grained than air—for some have also said that the primary element is like this" (*Met.* I 7 988^{a}23–32).
Those who mix them and draw their starting-points from both: Both incorporeal understanding and the corporeal mixture of homoeomerous things are starting-points for Anaxagoras (I 2 404^{a}25–26). Both the corporeal elements (earth, water, air, and fire) and incorporeal love and strife are starting-points for Empedocles (*Met.* I 4 985^{a}4–6, 8 989^{a}20–21).

Note 47

Fire . . . is moved and also moves other things in a direct way (*prôtôs*): "There is something that is itself moved directly (*prôton*), and this is the intrinsically movable" (*Met.* XI 11 1067^{b}4–5). Thus fire is intrinsically, or in virtue of its own nature, moved (or in movement), and directly moves other things. *Prôton* also means "first" or "primary" (as at I 2 405^{a}4–5).

Note 48

Democritus has more subtly (*glaphurôterôs*) **explained each of these:** *Glaphuros* means "smooth," "neat," "delicate," and by extension "subtle," "exact," "refined," or "polished." It is a type of praise Aristotle often lavishes on Democritus: "The most methodical route of inquiry (*hodê[i] malista*), however, which covers everything in a single account, is that of Leucippus and Democritus, who produce a starting-point that is in accord with nature" (*GC* I 8 324^{b}35–325^{a}2; also I 1 315^{a}34–35, 316^{a}13–14). But he can also be quite critical of him: "But the question of movement—where it comes from and in what way it belongs to beings—these people, in a quite similar way to the others, carelessly neglected" (*Met.* I 4 985^{b}19–20).

Note 49

Anaxagoras, while seeming to speak of soul and understanding as distinct, as we said earlier: At I 2 404^{b}1–6.

He regards understanding (*noun*) **above all as the *starting-point* of everything:** *Nous* starts the vortex-movement responsible for cosmic order, but subsequent movements seem to be explained mechanically (DK B9 = TEGP 17 F6, B13 = TEGP 33, B15–16 = TEGP 35–36 F18–19).

Note 50

He says that it alone of the beings is simple, unmixed, and pure: DK B12 = TEGP 31 F15.

Note 51

He says that understanding set the universe moving: See 404^{a}25–27n.

Note 52

Thales (of Miletus): See DK 11 = TEGP 17–44.

Note 53

Diogenes, however, as well as some other people, took the soul to be air: "Anaximenes and Diogenes posit air as prior to water and as more than anything else the starting-point of the simple bodies" (*Met.* I 3 984^{a}5–7).

Diogenes (of Apollonia): See DK 64 = TEGP 434–461.

Note 54

Heraclitus (of Ephesus): See DK 22 = TEGP 135–200.

If indeed it is the "evaporation" (*anathumiasin*) **from which the other things are composed:** "Heraclitus says that the soul of the cosmos is an evaporation (*anathumiasin*) of the moist things in it, while the soul of animals, which arises both from external and internal vapors, is of the same kind (*genos*) as that of the cosmos" (TEGP 104 = Aëtius P 4.3.12). It is fire, however, not the evaporation that is the primary element and starting-point: "Fire is the element [DK B30 = TEGP 47 F29] and all things are exchange for fire [B90 = 55 F33] and come into being by rarefaction and condensation [B10 = TEGP 69 F40]; but of this he gives no clear explanation. All things come to be by conflict of opposites, and the whole flows like a river. . . . Evaporations arise from earth as well as from sea; those from sea are bright and pure, those from earth dark. Fire is fed by the bright evaporations, the moist element by the others" (DL IX [**8–9**] 86–104).

It is the least corporeal thing and always flowing (*rheon aei*): "Heraclitus says somewhere that 'everything gives way (*panta chôerei*) and nothing stands fast,' and likening the beings to the flowing (*rhoê[i]*) of a river, he says that 'you cannot step into the same river twice'" (Plato, *Crat.* 402a8–10). He may be recalling "On those stepping into rivers staying the same other and other waters flow" (DK B12 = TEGP 62 F39), which says something less extreme. Two other formulations come closer to Aristotle's: "The things themselves . . . , they think, are never stable or steadfast, but flowing and moving, full of every sort of motion and constant coming to be" (411c2–5); "everything is always moving and flowing" (439c2–3).

It is by something moving that something moving is known: An inference on Aristotle's part, apparently, from the fact that Heraclitus generates souls and things from the same starting-points, and that like is known by like (I 2 404^{b}17–18).

Note 55

He thinks that the beings are in movement, as most thinkers do (*kai hoi polloi*): Sometimes Aristotle uses *hoi polloi* (literally, "the many," "the multitude") to refer simply to a majority of people of whatever sort—to most people or, as here, most thinkers. But quite often, he uses it somewhat pejoratively to refer to the vulgar masses (*NE* I 5 1095^{b}16), in contrast to cultivated, sophisticated, or wise people (1095^{a}21)—in other words, to ordinary people.

Note 56

Alcmaeon (of Croton): DK 24.

Note 57

The whole heaven (*ouranos*): "Let us first say what we mean by *ouranos* and how many senses it has. In one sense, then, [1] we mean by *ouranos* the substance of the outermost circumference of the universe, or the natural body that is on the last circumference of the universe, since more than anything else it is the last upper region that we usually call *ouranos*, the one in which we say that everything divine also has its seat. In another sense, [2] *ouranos* is the body that is continuous with the last circumference of the universe, in which we find the moon, the sun, and some of the stars, since we say that these bodies too are in the *ouranos*. Further, [3] we call *ouranos* the body that is encompassed by the last circumference, since we usually call *ouranos* the whole [cosmos] and the universe (*to holon kai to pan*)" (*Cael.* I 9 278^{b}9–21). Here *ouranos* refers to [3] the universe (on which, see I 2 404^{a}25–27n).

Note 58

Hippo: An eclectic philosopher of the time of Pericles (c. 495–428 BC). The "shabbiness" of his thought is remarked on at *Met.* I 3 984^{a}3–5.

Note 59

Critias (of Athens): Critias was the cousin of Plato's mother, possible author of the atheistic play *Sisyphus*, and one of the bloodiest of the notorious Thirty Tyrants, which was the oligarchy installed in Athens in 404 BC by the victorious Spartans.

Note 60

Each of the four elements has found some judge in its favor, except earth: "None of those who say that [the element of bodies] is one thought that earth is the element, clearly because of the largeness of its parts, whereas of the three [other candidate] elements each has found some judge in its favor, for some say that this is fire, others that it is water, others that it is air" (*Met.* I 8 989^{a}5–8).

Note 61

All speaking in somewhat similar ways as each other, except for one: Namely, Anaxagoras (I 2 405^{b}19).

Note 62

Anaxagoras alone says that the understanding is unaffectable and has nothing in common with any of the other things: See I 2 405^{a}16–17n.

Unaffectable (*apathê[i]*): "The states in virtue of which something is wholly unaffectable or unchangeable or not easily moved for the worse are said to be capacities. For things get broken and crushed and bent and in general pass away not by being capable but by being not capable and deficient in something. And they are unaffectable in these ways if they are scarcely or gently affected because of a capacity they have and by being capable and being in some state" (*Met.* V 12 1019^{a}26–32).

Note 63

We said earlier that it is not necessary for what moves things to be itself moving: The reference is to I 2 403^{b}29–30, where the view is expressed by implication, but not argued for. It is argued for in *Ph.* VIII 5, especially 257^{a}35–258^{b}9.

Note 64

There are four sorts of movement (*kinêseôn*)**—spatial movement** (*phoras*)**, alteration** (*alloiôseôs*)**, withering** (*phthiseôs*)**, and growth** (*auxêseôs*): A *kinêsis* in the broad sense, which is the relevant one here, is a change (*metabolê*) of any sort (*Ph.* III 1 210^{a}8–9). But sometimes a *kinêsis* is more narrowly a movement or change of place, so that a coming to be (passing away) is a *metabolê* but not a *kinêsis* (V 1 225^{b}7–9). A *kinêsis* is often contrasted with an *energeia* (*DA* I 1 402^{a}26n).

Note 65

All the aforementioned sorts of movement occur at a place: "Of the three sorts of movements, the one with respect to magnitude [= withering and growth], the one with respect to affection [= alteration], and the third with respect to place (which we call 'spatial movement'), it is the last that must be primary. For it is impossible for there to be growth without a prior alteration. For what grows in one way grows by what is like it, but in another by what is unlike it—for contrary is said to nourish contrary. But in everything that comes to be, like is added to like. But then if there is *alteration*, there must be something that does the altering and makes, for example, what is potentially hot, actively hot. It is clear, then, that the mover is not always in the same position, but sometimes closer, sometimes farther away, from what is altered. But this could not occur without spatial movement. If, therefore, there must always be movement [or change], spatial movement must always exist as the primary movement, and if there is a primary and a posterior sort of spatial movement, the primary sort must always exist" (*Ph.* VIII 7 260^{a}26–^{b}7). **Occur at a place** (*en topô[i]*): "[Place is] the limit of the surrounding body at which it is in contact with the thing surrounded" (*Ph.* IV 4 212^{a}6–6a); "That there is such a thing as place seems clear from the fact of replacement, since where water exists now, there—when the water has gone out as from a vessel—air next exists, and at another time some other body occupies this same place" (*Ph.* IV 1 208^{b}1–4). The movements occur "at (*en*)" the place that the body they belong to is "in (*en*)."

Note 66

The pale (*tô[i] leukô[i]*) **or the three cubits in length** (*tô[i] tripêchei*): *To leukon* is probably not the universal *pallor*, but *to ti leukon*, a particular instance of pale, whose presence in a particular substance, A, makes it true that it coincides with A and that A is predicatively pale (*Cat.* 2 1^{a}27–28). Similarly, *to tripêchu* is probably not the universal length of three cubits but a particular instance of it.

Note 67

The pale and the three cubits in length . . . have no place belonging to them: This follows from the definition of place: "Place is . . . the limit of what encompasses something at which it is in contact with what is encompassed. (By 'what is encompassed' I mean body that can be moved by way of spatial movement)" (*Ph.* IV 4 212^{a}5–7).

Note 68

If it is moved by nature, it will also be moved by force, and if by force, then also by nature: Each of the four sublunary elements—earth, water, air, fire—has a rectilinear movement that is natural to it. Earth, for example, naturally moves downward to the center of the cosmos, whereas fire naturally moves upward to its periphery (I 3 406^{a}27–28, *Cael.* IV 4). Observation tells us, however, that each of these elements can be forced to move in a non-natural way by one of the others, or by something else (*Ph.* V 6 230^{a}29–^{b}10, *GC* II 6 333^{b}26–30). The only apparent exception is the case of the heavenly bodies, which are composed of the superlunary element, ether or "primary body (*sôma prôton*)" (*Ph.* I 2 269^{b}2–6, 3 270^{b}19–25, *Mete.* I 3 339^{b}25–27), whose natural movement is circular (*Cael.* I 2 268^{b}24), since they move eternally in fixed circular paths in a fixed direction (II 5). This exception, however, may be only apparent. For Aristotle seems to allow that—counterfactually, at any rate—such things can, for example, begin to move: "Even if it [the cosmos] never began moving, all the same it must have a starting-point from which it would have begun if it had begun moving, and, if it were to come to a stop, from which it would start moving again" (*Cael.* II 2 285^{b}6–8). Presumably, then, he could also allow that the cosmos, and the heavenly bodies that are parts of it, could be—again, counterfactually—forced to move against their nature. Since all movements, in Aristotle's view, are "either in a circle or in a straight line or in a combination of the two" (*Ph.* VIII 8 261^{b}28–29), and all bodies are made up of elements, what applies to the movements of the elements applies to their movements too.

Note 69

These are the movements belonging to these bodies: The outermost sphere of the fixed stars is finite in size (*Cael.* II 4 286^{b}10–11), with a fixed center coinciding with the center of the universe (II 14 296^{b}6–18) and a fixed periphery coinciding with the outermost boundary (I 6 273^{a}7–13). In common with the other celestial spheres, to which the various heavenly bodies are affixed, this outermost one is not a lifeless object but one that otherwise intractable puzzles make it reasonable to consider as animate—as having a soul (II 12 292^{a}14–22). In the case of sublunary animate beings, up and down, front and back, right and left are not just spatially or relationally distinguished but functionally and absolutely so: "the part from which the distribution of nourishment and growth derives in each living thing is up and the last part toward which this travels is down—the one is a sort of starting-point, the other a limit; and up is a starting-point" (*IA* 2 705^{a}32–^{b}2; also *DA* II 4 416^{a}5). Similarly, the front is a starting-point, because it is where the organs of perception are located (4 705^{b}10–13). Even in earthworms, where right and left are more difficult to distinguish perceptually, the functional difference between them still exists: "the starting-point of the movement is the same in all animals and by nature has its position in the same place; and it is from the right that the starting-point of movement derives" (*IA* 5 706^{a}10–13). Thus human beings put their left foot forward, unless they accidentally do the opposite, since "they are moved not by the foot they put in front, but by the one with which they step off" (5 706^{a}8–9). In the case of the sphere of the fixed stars, the same applies not just to right and left but to all six functionally defined directions (*Cael.* II 2 285^{a}31–^{b}8). Animate beings are animate beings, after all, no matter where they are. It is these functionally defined directions that determine unconditional or absolute locations or places in the universe. The place that is unconditionally up, for example, as opposed to being up relative to something else, is at the periphery of the sphere of the fixed stars; the one that is unconditionally down is at its center (IV 2 308^{a}17–29). It is absolute places, in turn, that figure in the essential definitions of the five elements, making them the closest analog of form that these elements possess (*Ph.* VIII 4 255^{b}13–17). Thus earth, for example, is what is unconditionally heavy, since unless it is opposed, it naturally moves toward the place at the center. The center of the universe, therefore, is its proper place—the place where it would be unless something else prevented it. That is why if the soul's natural movement were downward, it would be earth, since it would share in earth's essential definition.

Note 70

The intermediate ones: The bodies between fire and earth, namely, water and air.

Note 71

The soul too would change in accord with the body: Reading κατὰ τὸ σῶμα with Ross and the mss. for OCT κατὰ τόπον (“the soul too must change with respect to place”).

In respect of its parts: When, for example, the body of a human being stands still while its arms move, the soul moves in an analogous way.

Note 72

It would also be possible for a soul that had gone out of a body to enter it again, and from this would follow the possibility of the resurrection of animals that have died: The argument is something like this: if the soul moves with spatial movement, then it can move in and out of the place where a body is, and so can move into a place where a dead body is, thereby animating it anew.

Note 73

If all movement is a displacement of what is moved insofar as it is moved: See III 7 431^{a}6–7n.

Note 74

Philippus: A son of Aristophanes, and a comic writer of the so-called Middle Comedy period.

Daedalus: A legendary craftsman and inventor.

Aphrodite: The goddess, especially, of sexuality and reproduction, emblematic of seductive charm and deception.

Note 75

Democritus says that the spherical atoms, which are moving because by nature they can never remain still: See I 2 405^{a}8–13.

Note 76

In general, it does not appear to be in this way that the soul moves the animal, but rather through a sort of deliberate choice and understanding: “Deliberate choice (*prohairesis*) is either desiderative understanding or thought-involving desire, and this sort of starting-point is a human” (*NE* VI 2 1139^{b}4–5). The human case undermines the generality of Democritus’ account.

Note 77

Timaeus (*ho Timaios*): The character Timaeus in the eponymous Platonic dialogue.

The soul moves the body as well, because of being woven together (*sumpeplechthai*) **with it:** “The soul was woven together (*diaplakeisa*) with the body from the center on out in every direction to the outermost limit of the heaven. . . . And revolving within itself, it initiated a divine start of unceasing, intelligent life for all time” (Plato, *Ti.* 36e2–5).

Note 78

The universe (*to pan*): See I 2 404^{a}25–27n.

For when it had been constituted from the elements and divided into parts in accord with the harmonic numbers, in order that it might have a native perception of harmony: See I 2 404^{b}17n.

The harmonic numbers: Two sets of numbers each forming a geometric progression (1, 2, 4, 8 and 1, 3, 9, 27) and together determining a scale of three octaves.

He bent the straight line into a circle, and, having divided the one circle into two, intersecting at two points, he again divided one of these into seven, the spatial movements of the heaven being regarded as the movements of the soul: "The appropriate shape for that living thing [= the heaven] that is to contain within itself all the living things would be the one that embraces within itself all the shapes there are. Hence he [= the Demiurge] gave it a round shape, with its center equidistant from its extremes in all directions. . . . [And] he awarded it the movement that properly belongs to its body—that one of the seven movements that is most of all associated with understanding (*nous*) and intelligence (*phronêsis*). And so he set it turning continuously in the same place, spinning around on itself. . . . Applying this entire train of reasoning to the god that was yet to be [= the heaven], the eternal god [= the Demiurge] . . . set a soul at its center, which he extended throughout the whole body. . . . And he set it to turn in a circle, a single solitary heaven" (Plato, *Ti.* 33b2–34b6). The seven movements referred to are the orbits of the moon, sun, Venus, Mercury, Mars, Jupiter, and Saturn.

Note 79

It certainly is not of the perceptual sort, or of the appetitive sort, since the movement of these is not circular spatial movement: "Once the souls were of necessity implanted in bodies, and these bodies had things coming to them and leaving them, the first native capacity they would of necessity come to have would be perception, which arises out of forceful disturbances. This they would all have. The second would be *erôs* [here ≈ appetite or desire], mixed with pleasure and pain" (Plato, *Ti.* 42a3–7). The soul of the universe, by contrast, while it does have understanding and intelligence (34a2), does not have any organs of perception or any appetites or desires (33c1–d3).

Note 80

The understanding is one and continuous in the same way as the activity of understanding, and the activity of understanding as the intelligible objects: "That which is indivisible not with respect to quantity, but in form, is understood in an indivisible time and with an indivisible part of the soul" (III 6 430^{b}14–15; also *Sens.* 7 448^{b}19–20).

Note 81

These are one by succession, however, just like number: "Successive is what is after the starting-point (the order being determined by position or form or in some other way) and has nothing of the same kind (*genos*) between it and what it succeeds—for example, lines in the case of line, units in that of unit, or houses in that of house (but there is nothing to prevent something of some other kind from being in between)" (*Met.* XI 12 1068^{b}31–35). Thus one intelligible object succeeds another, as one integer succeeds another, with nothing else of the same sort between them. See III 6 430^{b}14–15.

Not like spatial magnitude: "Something is said to be a quantity when it is divisible into components each of which is by nature a one and a this something. A quantity is a plurality if it is countable, a magnitude if it is measurable. Something is said to be a plurality when it is potentially divisible into non-continuous parts, a magnitude when divisible into continuous ones" (*Met.* V 13 1020^{a}7–11); "Two things are continuous when the limits of each, by which they touch and by which they are kept together, become one and the same" (XI 12 1069^{a}5–7).

Note 82

Such parts being regarded either as magnitudes or as points: "When something is indivisible in all dimensions and has position, it is a *point*" (*Met.* V 6 1016^{b}24–26). Because a point has no magnitude, Aristotle hesitates about calling it a "part" of a spatial magnitude, since the magnitude could not then be the sum of its parts.

Note 83

[1a–i] If it is with parts regarded as points, since these are unlimited in number, clearly the understanding will never get through them all: The idea here, as in [1a–ii], is that the understanding understands an intelligible object A by revolving so as to touch it with its parts. If these parts are points, the understanding will never complete its task, since such parts are unlimited in number.

Note 84

[1a–ii] If it is with parts regarded as magnitudes, the understanding will understand the same thing many or an unlimited number of times: In this case, the understanding could touch (all of) A with one of its parts and then, as it revolves, touch it again with another. As a result it will understand A over and over again, as one after another its extended parts touch A. This conflicts with what appears to be so, namely, that we can understand something just once.

Note 85

What, then, will it always be understanding—for there must be something, if indeed the revolution is eternal? This is because what activates the understanding is its contact with an intelligible object: "What is receptive of the intelligible object and the substance is the understanding, and it is active when it possesses it" (*Met.* XII 7 1072^{b}22–23). That is why if "it understands nothing . . . it would be just like someone asleep" (9 1074^{b}17–18).

Note 86

Of all practical understandings there are limits (for they are all for the sake of other things): "None of the things that further the end is unlimited, since the end itself constitutes a limit" (*Pol.* I 9 1257^{b}27–28).

Practical understandings: "Understanding . . . that is of the practical sort, which rationally calculates for the sake of something, and differs from the theoretical sort in respect of the end" (*DA* III 10 433^{a}13–15).

All theoretical ones are similarly determined by accounts: In theoretical cases, understanding is of scientific starting-points (*NE* VI 6 1141^{a}7–8), whose account or definition must be finite or limited in length. See I 3 407^{a}30n.

Note 87

Every account (*logos*) **is either a definition or a demonstration:** Aristotle is speaking loosely, dividing the objects of theoretical understanding (accounts) into things that are grasped without reasoning (definitions, in a loose sense) and things that are grasped by means of reasoning (demonstrations, in a loose sense). For not all accounts are strictly speaking definitions (*Met.* VII 4 1030^{a}7–17), nor are all even deductive arguments strictly speaking demonstrations (I 3 407^{a}27n).

Definition (*horismos*): A definition is an account that specifies the essence or the what-it-is of the definiendum by giving its genus and differentia (*APo.* II 13 96^{a}20–97^{b}39).

Demonstration (*apodeixis*): See I 1 402^{a}15n, II 1 412^{a}10n(6).

Note 88

And demonstrations are both from a starting-point and have a sort of end: Reading αἱ μὲν οὖν ἀποδείξεις καὶ ἀπ’ ἀρχῆς καὶ ἔχουσαί πως τέλος for OCT ἡ μὲν οὖν ἀπόδειξις καὶ ἀπ’ ἀρχῆς καὶ ἔχουσά πως τέλος (“a demonstration is both from a starting-point and has a sort of end”).

The deduction (*sullogismon*): At *APr.* I 32 47^{a}33–35 a syllogism (also *syllogismos*) is distinguished from a “necessity” (or what we would call a valid deduction) on the grounds that not all necessities are syllogisms. When a deduction is a syllogism proper it consists of a major premise, a minor premise, and a conclusion, where the premises have exactly one “middle” term in common, and the conclusion contains only the other two “extreme” terms.

Note 89

Definitions too are all limited in length: “A definition is a sort of number, since it is divisible, and indeed into indivisibles (for the accounts are not unlimited), and number is like that” (*Met.* VIII 3 1043^{b}34–36).

Note 90

[3] If the same revolution comes about often, the understanding must often think the same thing: [3] is related to [1a–ii] but is not a repeat of it. [1a–ii] focuses on repeated touchings of the same object with different extended parts of the understanding, each one of which is sufficient for understanding the object. [3] focuses on the fact of revolution. If understanding A consists in revolving in a certain way, then every time the circle of the understanding revolves in that way A will be understood—whether A is being touched or not.

Note 91

Understanding something is more like a coming to rest or coming to a stop (*epistastei*) **than a movement:** “The states of the understanding part [of the soul] are not alterations, nor is there any coming to be of them. For we must rather say that what knows scientifically is in [the category of] what is related somehow to something. Further, it is evident too that there is no coming to be of them. For what potentially knows scientifically becomes what [actually] knows scientifically not because it has itself moved but, rather, because of the presence of something else [namely, the object it is related to]. For when the part comes to be [known],

[what knows] somehow scientifically knows the universal [whole] by means of the part. And again, there is no coming to be of the use or activation [of the state], unless we suppose that there is a coming to be of both catching sight and of touching, since the use and activation are similar to these. And the original acquisition of scientific knowledge is neither a coming to be nor an alteration, since we are said to know and to understand (*phronein*) as a result of our understanding's having come to rest and being still, and there is no coming to be of being at rest, or indeed of any change (*metabolê*) at all" (*Ph.* VII 3 247^{b}1–13). Also *Met.* II 2 994^{b}24–25.
Coming to a stop (*epistastei*): "The name '*epistêmê*'... seems to signify that it stops (*histêsi*) the movement of our soul toward (*epi*) things" (Plato, *Crat.* 437a3–5).
It is the same way with a deduction: "In the case of understanding and making deductions about immovable objects . . . the end is a theoretical object, for when one understands the two premises, one understands and puts together the conclusion" (*MA* 7 701^{a}9–11).

Note 92
What is not moving easily but by force is certainly not blessedly happy either: As Plato supposes it is: "And he set it to turn in a circle, a single solitary heaven, whose very virtue enables it to keep its own company without requiring anything else, since its knowledge of and friendship with itself is enough. Because of all this, then, the cosmos he begat for himself is a blessedly happy god" (Plato, *Ti.* 34b4–9). Aristotle is apparently presupposing his own view that happiness resides in voluntary, and so unforced (*NE* III 1 1110^{b}35–^{a}1), leisurely activity (X 7 1177^{b}4), which is given cosmic application in the following text: "The ancients assigned the heaven—that is, the upper region—to the gods, on the supposition that it alone is immortal. And the present account does testify that it cannot pass away or come to be, and, further, that it is unaffectable by any mortal troubles, and that, in addition, it is effortless, because it needs no forceful necessity to constrain it and prevent it from traveling in another way that is natural to it. For everything of that sort involves effort—the more so, the more long-lasting it is—and is without a share in the best disposition" (*Cael.* II 1 284^{a}11–18).
Blessedly happy (*makarion*): *Makarios* is often a synonym for *eudaimôn* ("happy"), but sometimes with the implication of being extremely happy (*NE* I 10 1101^{a}7) or in a condition like that of the gods (X 8 1178^{b}25–32).

Note 93
If movement is not its substance, the soul would be moved against its nature: Reading μὴ οὐσία with the mss. for OCT ᾗ οὐσία ("if movement is in respect of its substance"). If an attribute is not included in an object A's substance or essence, it is not generally true, in Aristotle's view, that movement or change with respect to that attribute is against A's nature: being pale is not part of the human essence, but change from pale to dark is not against nature for a human. This is what speaks in favor of the OCT emendation. But because the circular movement of the soul is eternal, it belongs to it with a sort of necessity, since as long as the Demiurge wills the good, its movement will not alter any more than the created gods (= the stars and planets) will die: "Gods, works divine whose maker and father I am,

whatever has come to be by my hands cannot be dissolved without my consent. Now while it is true that everything that is put together can be dissolved, still only someone evil would consent to the dissolution of what has been beautifully fitted together and is in good condition. That is why you, as creatures that have come to be, are neither completely immortal nor completely exempt from dissolution. Still, you will not be dissolved nor will death be your lot, since you have received the guarantee of my will" (Plato, *Ti.* 41a7–b5). If this sort of necessary movement is not part or a consequence of the soul's essence, it does seem reasonable to think that it is contrary to nature. In any case, Plato seems to have thought so, since he describes the effect of embodiment on *our* souls as follows: "We must not think . . . that the soul *in its truest nature* is full of complexity, dissimilarity, and conflict with itself [as it appears to be while embodied]. . . . We must keep in mind what it [= the soul] grasps and the kinds of things it longs to associate with, because it is akin to what is divine and immortal and what always exists, and what it would become if it followed this longing with its whole being and if that impulse lifted it out of the sea in which it now is [= the body], and struck off the rocks and shells which, because it now feasts on earth, have grown around it in a wild, earthy, and stony profusion as a result of those so-called happy feastings. And then *you would see its true nature*, whether multiform or uniform, or somehow some other way" (*Rep.* X 610a101–612a4). It may be, then, that we can preserve the transmitted text as not in fact conflicting with Aristotle's general views.

Note 94

If indeed it is better for the understanding not to be involved with the body: A view Plato also expresses: "[Socrates] It looks as though there is something like a *path* that leads us and our reason out of confusion when we are engaged in inquiry. As long as we have a body, and our soul is contaminated by such a bad thing, we shall never adequately attain what we desire—which, we say, is the truth. The body keeps us busy in a thousand ways because of the nourishment it must have—besides, if any illnesses befall it, they impede our hunt for what is. It fills us too with multifarious passions, appetites, fears, and phantoms, and with all sorts of other trash, so that we are really and truly, as the saying goes, never able to think about anything because of it. It is nothing other than the body and bodily appetites, indeed, that cause wars and factions and conflicts. For it is over the acquisition of wealth that all wars take place, and it is because of the body that we are compelled to acquire wealth, since we are enslaved to its service. And so for all these reasons it keeps us too busy to practice philosophy. Worst of all, if we *do* get any leisure from it, and turn to investigate some issue, in the middle of our inquiries there it is again creating uproar, disturbance, and fear all over the place, so that the truth cannot be discerned in a pure way because of it. But in fact it has been shown to us that if we are ever going to know anything in a pure way, we must be apart from the body and must look at things by themselves with the soul itself. It is then, it seems, that the thing we desire and whose lovers we claim to be—wisdom—will be ours, and that happens, the argument indicates, when we are dead, not while we are alive. For if we cannot know anything in a pure way when we are together with the body, then one of two things holds: either there is nowhere we can acquire knowledge, or it is when we are dead—since it is then that the soul will be just by itself, separate from the body, and not before. And so, while we are alive, we shall come closest to knowledge, it seems, if we have as little to do with the body as possible and as little association with it, beyond what is absolutely unavoidable, and do not allow ourselves to be infected by its nature, but remain purified of it, until the god himself releases us. And if we become purified in that way, by being parted from the foolishness of the body, we will probably be with similar people, and know through our own selves all that is uncontaminated—and that, presumably, is the truth. For it is not lawful for what is not pure to grasp what is pure" (Plato, *Phd.* 66b3–67b2); "[Athenian Stranger] The association of body and soul, you see, can never be superior to their separation (and I mean that quite seriously)" (*Lg.* VIII 828d4–5).

Note 95

This sort of investigation properly belongs to other accounts (*logôn heterôn*): The reference is somewhat unclear. But if the relevant investigation is into the relationship between the god, the heaven, and the good, then it is presumably to *Met.* XII 10.

Note 96

It seems that in fact each body has its own special form and shape: The soul, for Aristotle, is the form of a certain sort of body: "The soul of animals (for this is substance of the animate) is the substance that is in accord with the account and is the form and the essence of such-and-such sort of body" (*Met.* VII 10 1035^{b}14–16). Thus a body cannot, by having a soul inserted in it, acquire a form or shape different from the one it has antecedently.

Form (*eidos*) **and shape** (*morphê*): Aristotle often speaks of form as if it were analogous to shape. But in fact it is only in the case of simple artifacts, such as statues and the like, that the two are similar.

Note 97

Common accounts: Perhaps a reference to Aristotle's own *Eudemus*, in which the account of the soul as an attunement is discussed (Fr. 45 = Barnes p. 2402), as it is in Plato's *Phaedo* (85e–86d, 92a–95a).

Note 98

A harmony is a blend (*krasin*) **and a combination** (*sunthesin*) **of contraries, and the body consists of a combination of contraries:** Aristotle sometimes distinguishes between a mere combination (*sunthesis*) or mechanical mixture and a chemical one (*mixis*), which involves the formation of a new homogeneous stuff with new emergent attributes: "mixture (*mixis*) is unification of the mixables, resulting from their alteration" (*GC* I 10 328^{b}22). A blend or fusion (*krasis*) is a *mixis* particularly of liquids: "a *mixis* of dry things is not a *krasis*" (*Top.* IV 2 122^{b}31).

Note 99

Strictest (*kuriôtata*): Control is fundamentally executive power or authority or the power to compel, so that a general is *kurios* over his army (*NE* III 8 1116^{a}29–^{b}2) and a political ruler is *kurios* over a city and its inhabitants. Since what is *kurios* in a sphere determines or partly determines what happens within it, it is one of the most estimable or important elements in the sphere, so that what is inferior or less important than something cannot control it (VI 12 1143^{b}33–35, 13 1145^{a}6–7). Hence *kuria aretê* is "full virtue" or virtue in the full or strict sense of the term (13 1144^{b}1–14). It is in this sense that the use of the term "harmony" to apply to spatial magnitudes that fit together in a certain way is the most controlling or strictest one, whereas the use of it to denote the attribute that all such magnitudes have in common derives from the former use.

Whenever they so fit together (*sunarmozôsin*) **that nothing of the same kind** (*suggenes*) **can intervene:** A restricted version of the following principle: "People regularly say of works that are well made that nothing could be taken away or added, since excess and deficiency ruin what is well done" (*NE* II 7 1106^{b}9–12).

Same kind (*suggenes*): The various ways in which the noun *genos* is used are discussed in *Met.* V 28. Aristotle uses it in a technical sense to refer to a genus studied by a single science, as he uses *eidos* to refer to the species of a genus, and to form (as opposed to matter), and to a separate Platonic Form. But he also uses both terms in a more general sense to mean "kind" or "type." Transliterations are added for precision.

Note 100

Is love the cause of any random mixture, or the one that is in accord with the ratio, and is love the ratio or a distinct thing beyond the ratio? Love is the good cause of aggregation and mixture for Empedocles; strife the bad cause of disaggregation (DK B17 = TEGP 41 F20, B21 = TEGP 45 F22, B35 = TEGP 51 F28, B122 = TEGP 183 F129, B115 = TEGP 25 F8). Aristotle praises him for claiming that "bone exists as a result of its ratio, and this is the essence and the substance of the thing," thereby latching onto the formal cause, albeit in an inarticulate way (*Met.* I 10 993^{a}15–18).

Note 101

The being for flesh (*to sakri einai*) **and for the other parts of the animal:** The being for A = the essence of A (*Met.* VII 4 1028^{b}13–1030^{b}13). In this case, the being for the parts of an animal is the ratio present in their elements.

Note 102

Recollection (*anamnêsis*) **begins from the soul and extends to the movements or the traces in the perceptual organs** (*aisthêtêriôn*): "Further, it is evident that a person can remember something from the start, once he has perceived or experienced it, without having just now recollected it. But when he recovers previously held scientific knowledge or perception or that of which we were earlier saying that the related state is memory, this, occurring at this time, is recollecting one of the things we mentioned, and when he does remember the result is that a memory follows" (*Mem.* 2 451^{a}31–^{b}6).

Note 103

The understanding (*ho nous*) **seems not to pass away:** *Nous* is a divine substance (*NE* I 6 1096^{a}24–25, X 7 1177^{b}19–1178^{a}8) and so shares in the immortality that is

characteristic of the divine: "it alone [of the parts of the human soul] is immortal and eternal" (*DA* III 5 430^{a}23). Moreover, "bodily activity is in no way associated with its activity" (*GA* II 3 736^{b}28–29), which is why it alone is separable from the human body and can survive its death. See I 1 402^{b}16n.
Seems to be born in us as a sort of substance (*ousia tis*): See Introduction pp. xxiv–xxvii.

Note 104
Old age is not due to the soul's being affected in a certain way but, rather, what the soul is in, as in the case of drunkenness and disease: "The states of the thought-involving part are not alterations either, nor is there any coming to be of them. For very much more [than in the case of the virtues of character] we speak of what has scientific knowledge as belonging in [the category of] being related in a way to something. Further, it is also evident that there is no coming to be of these. For what has scientific knowledge potentially comes to have scientific knowledge [actively] not at all by being itself moved but by the presence of something else. For when the particular comes to be [present], the universal is in a way scientifically known by means of the particular. Again, there is no coming to be of the use and activity [of the state], unless one thinks that there is also a coming to be of seeing and touching, since its using and being in activity are similar to these. And the acquisition of scientific knowledge at the start is not a coming to be or an alteration, since we are said to scientifically know and to understand (*phronein*) as a result of our understanding's having come to rest and to a stop, and there is no coming to be of being at rest, or indeed of any change at all, as has also been said earlier. Further, just as when someone changes from drunkenness, sleep, or disease to the contrary states we do not say that he has *come to have* scientific knowledge again, even though he was incapable of using his knowledge [while drunk, asleep, or diseased], so likewise when he acquires the state at the start we should not say either [that he is *coming to have* scientific knowledge]. For it is due to the soul's stopping its natural restlessness that something becomes wisdom or scientific knowledge. That is also why children are incapable of either learning or discerning by means of the perceptible capacities as well as their elders, since the disturbance and movement [in their souls] is great, and it settles down and comes to rest with regard to some things due to nature itself, and with regard to others due to other causes, but in either case accompanied by the alteration of certain things in the body, just as in the case of the use and activity [of the understanding part] when someone becomes sober or wakes up" (*Ph.* VII 3 247^{b}1–248^{a}6).

Note 105
When that passes away it neither remembers nor loves: "That" refers to so-called passive understanding, "it" to so-called productive or active understanding (III 5 430^{a}23–24n).

Note 106
What is common: Namely, the rational animal to whom both the soul and the understanding belong in common.

Note 107

The understanding is perhaps something divine and is unaffectable: See II 1 413^{a}6–7, III 5 430^{a}18–23.
Unaffectable: I 2 405^{b}20n.

Note 108

The most unreasonable of the views we mentioned, though, is that which says that the soul is a self-moving number: The view of Xenocrates of Chalcedon (F85–132 Isnardi), already mentioned at I 2 404^{b}27–30 and at *APo.* II 4 91^{a}37–38, *Top.* III 6 120^{b}3–4, IV 6 127^{b}13–17, VI 3 140^{b}2–3.

Note 109

Insofar as it is capable of moving things and of being moved, it must admit of differentiation: "That a moving thing is moved by something is most evident in the case of things that are moved contrary to nature, since they are clearly moved by something else. After things that are moved contrary to nature the next most evident case is that of things that by nature move themselves—for example, animals. For what is unclear in this case is not whether they are moved by something, but rather how we are to distinguish in them the mover from the moved. For just as in ships and things not composed by nature, so too in animals, the mover and the moved seem to be distinct, and it is in this way that the whole thing moves itself" (*Ph.* VIII 4 254^{b}24–33).

Note 110

They say that a line when moved makes a surface, and a point a line: A view attributed to Speusippus (F52 Tarán) rather than Xenocrates.
The movements of the units will also be lines: Entailing either that the units are not souls or that the souls are lines (see I 4 409^{a}28–30).

Note 111

There will be in it a mover and a moved: Reading ἔσται ἐν αὐτῷ τὸ μὲν κινοῦν τὸ δὲ κινούμενον with Ross.
There will be in it a mover and a moved, just as there is in a spatially continuous thing: "If something moves itself, how does it move itself and in what way? It is necessary, of course, for everything that is in movement to be divisible into parts that are at every stage divisible. For it was shown previously in our universal discussions concerning nature [namely, *Ph.* VI 4 234^{b}10–20] that everything that is intrinsically in movement is continuous. It is impossible, then, for what moves itself to move itself in its entirety. For it would be spatially moved as a whole and would spatially move [itself] with the same spatial movement, while being one and indivisible in form, and it would be altered and would alter [itself], so that it would teach and learn at the same time, and make healthy and be made healthy with the same health. Further, we have determined that it is what is capable of being moved that is moved. But this is potentially moving, not actually, and what is potential is on its way toward actuality, and movement is the incomplete actualization of what is capable of being moved. The mover, on the other hand, is already active—for example, the hot heats things, and in general what has the form begets [as the

father begets a child with the same form as himself]. So the same thing will be hot and not hot at the same time and in the same respect, and likewise with each of the other cases in which the mover must have the same name [as the moved]. Therefore, when a thing moves itself one part is the mover and another the moved" (*Ph.* VIII 5 257^{a}32–^{b}13).

Note 112

Since each will occupy the space of a point: Reading καθέξει γὰρ ἑκάστη χώραν στιγμῆς with Ross.

Note 113

And yet what prevents an unlimited number of things from also being in the same place if two can be? Reading ἄπειρα with Ross for OCT ἀπείρους.

Note 114

How is it possible for the points to be separated and set free from the bodies, if at any rate lines do not divide up into points? Lines here are analogues of souls (I 4 409^{a}3–7).

Note 115

The result, as we said, is that in a way this view says the same thing as those who posit that the soul is some sort of fine-grained body: The reference is presumably to I 4 408^{a}10–11.

Note 116

And every body will have a soul: Reading καὶ with Ross for OCT ἢ ("or every body will have a soul").

Note 117

It is not only impossible for something of this sort to be the definition of soul, it cannot even be a coincident of it: "Substance [= what the definition is of] and coincident are distinguished by this: the pale coincides with the human because he is pale but not just [what] pale [is]" (*Met.* IV 4 1007^{a}31–33). Compare I 3 405^{a}31–406^{a}2, 4 409^{a}1–3.

Note 118

For, as we said earlier, it is not even easy to conjure one up on this basis: At I 4 408^{a}3–5 (see also I 1 402^{b}25–403^{a}2).

Conjure up (*manteusasthai*): *Manteuomai* means "divine," or "prophesize." The force here is like that of *plattein* ("fabricate") at I 3 406^{a}27, I 5 411^{b}19.

Note 119

As Empedocles says of bone: DK B96 = TEGP 114 F69.

Note 120

Likewise with the good and the not good, and in the same way other things: The problem here is apparently with the presence of opposites or contraries in the soul at the same time. To know the good the soul must be good; to know the not good it must be not good.

Note 121

Things are said to be in many ways: "Something is said to be in many ways, but all with reference to one starting-point. For some things are said to be because they are substances, others because they are attributes of substances, others because they are a route to substance, or else by being passings away, lacks, or qualities of substance, or productive or generative either of substance or of things that are said to be with reference to substance, or denials of one of these or of substance (that is why we say even of not being that it *is* not being)" (*Met.* IV 2 1003^b5–10).

On the one hand it signifies the this something and on the other, quantity, quality, or some other of the categories that have been distinguished: See I 1 402^a24–25n.

Note 122

Will they say that there are elements and starting-points special to each kind (*genos*): Aristotle often uses the term *genos*, as here, to refer to a category.

Note 123

It is also absurd to say both that like is unaffectable (*apathes*) **by like and also that like perceives like and knows like by like:** See I 2 405^b19–21.

Note 124

Each of the starting-points will have more ignorance than comprehension: The starting-points referred to are the elements.

Comprehension (*sunesis*): "Comprehension too, that is, good comprehension—the state by which we say people comprehend or comprehend well—is not the same as scientific knowledge as a whole nor as belief (since if it were, everyone would have comprehension), nor is it any one of the sciences dealing with a particular area, as medicine is concerned with healthy things, geometry with magnitudes. For comprehension is not concerned with what always is and is unchanging, nor is it concerned with just any of the things that come to be but with those one might puzzle and deliberate about" (*NE* VI 10 1142^b34–1143^a6). The term may be used here in a somewhat looser sense.

Note 125

A consequence for Empedocles at any rate is that the god will be the least wise thing of all: "Since all things are composed of the four elements, and furthermore of strife and love, and it is because of this that they know all things, namely, because they contain the starting-points of all of them, the sphere, which he says is god, does not have a share of strife and will therefore not know this" (Phil. *In. de An.* 181.24–27 = van der Eijk, p. 105). See DK B27–31 = TEGP 55–60 F30–34.

Note 126

The elements seem to be like matter; the most controlling factor, whatever it is, seems to be what holds them together: This factor is the form or actuality (II 1 412^b6–9n).

The most controlling factor: See I 4 408^a6n.

Note 127

It is reasonable for this to be by nature the most primordial thing and a ruler: “There is a mover that moves without being moved, being eternal, substance, and activity. This, though, is the way the object of desire and the intelligible object moves things: it moves them without being moved. . . . This, therefore, is the sort of starting-point on which the heaven and nature depend. And its way of life is like the best that we can have—and have for a short time (for it is always in this state [of activity], whereas we cannot be)—since its activity is also pleasure. . . . Active understanding, though, is intrinsically of what is intrinsically best, and the sort that is to the highest degree best is of what is to the highest degree best . . . so that active understanding rather than receptive understanding seems to be the divine element that understanding possesses, and contemplation seems to be most pleasant and best. If, then, that good state [of activity], which we are sometimes in, the [primary] god is always in, that is a wonderful thing, and if to a higher degree, that is yet more wonderful. But that is his state. And life too certainly belongs to him. For the activity of understanding is life, and he is that activity; and his intrinsic activity is life that is best and eternal. We say, then, that the god is a living being that is eternal and best, so that living and a continuous and everlasting eternity belong to the god, since this is the god” (*Met.* XII 7 1072^{a}25–^{b}30); “It is itself, therefore, that it understands, if indeed it is the most excellent thing, and it is the active understanding that is an active understanding of active understanding” (9 1074^{b}33–35); “The beings, though, do not wish to be badly governed: ‘To have may rulers is not good; let there be one ruler’” (10 1076^{a}3–4).

Note 128

There appear to be certain animals that remain stationary with respect to place: “Some animals are stationary, others move about. The stationary ones are found in water, whereas no land-animal is stationary. But in the water we find many that live by sticking fast to something—for example, many kinds of shellfish do this. The sponge even seems to have a sort of perception” (*HA* I 1 487^{b}6–10). See also *Ph.* VIII 7 261^{a}15–17, *PA* IV 7 683^{b}9–10.
The only sort of movement: Of the four distinguished at I 3 406^{a}12–13.

Note 129

They would still not, in speaking in this way, be speaking in universal terms about all soul: Because they fail to consider the souls of plants.
Or about the whole of any one soul: This is because they omit nutritive soul, which is presupposed by all the other sorts of soul, whether thinking, perceptual, or appetitive.

Note 130

This is also what tells against the account in the so-called Orphic poems: “He says ‘so-called,’ because it seems that these verses are not by Orpheus, as indeed he himself says in *On Philosophy*; for it is the doctrines that are Orpheus’, and they say that it was Onomacritus who put them into verse” (Phil. *In. de An.* 186.24–26 = van der Eijk, p. 111).

Note 131
The whole: The totality of things = the universe (I 2 404^{a}26n).

Note 132
If indeed not all of them breathe: Fish do not breathe, in Aristotle's view (II 8 421^{a}3–4), although their gills perform an analogous function: "as in breathing animals living and not living depend on breathing, so in the other animals they depend on taking in water" (*Juv.* 27 480^{a}19–20).

Note 133
Presumably that is why Thales (of Miletus) thought that all things were full of gods: See DK 11 = TEGP 17–44.

Note 134
Non-homoeomerous parts (*anomoiomerês*): Something is homoeomerous in the strict sense if its parts, however small, are of the same sort as the whole—as parts of water, however small, are (or were thought to be) water too (*PA* I 2 647^{b}17–20).

Note 135
If, then, it is something else that makes the soul one, that other thing would be most of all soul: If the soul holds the body together, then the soul is a principle of unity. So if X holds the soul together, X has a better claim to be soul than what it holds together.

Note 136
About what part the understanding will hold together and how it will do so it is difficult even to fabricate something: See I 1 402^{b}13n, 4 408^{b}18–25.

Note 137
It is evident, too, that both plants and—among animals—some insects continue to live when divided, as having the same form (*eidos*) **of soul, even if not numerically the same one:** "Some things are one in number, others in form, others in kind (*genos*), others by analogy: in number, those whose matter is one; in form, those whose account is one; in kind, those whose figure of predication is the same; by analogy, those related as another thing is to another thing. And the latter sorts always follow along with the earlier ones—for example, those that are one in number are also one in form, whereas those that are one in form are not all one in number; but those that are one in form are also one in kind, whereas those that are one in kind are not all one in form, but are all one by analogy; on the other hand, those that are one by analogy are not all one in kind" (*Met.* V 6 1016^{b}31–1017^{a}3).

Note 138
They do not have the instrumental parts necessary to preserve their nature: "Now if we wanted to grasp the kinds (*eidos*) of animals, we would first determine what it is that every animal must have, for example, some of the sense-organs, something with which to masticate and absorb food, such as a mouth and a stomach, and in addition to these parts by which each of them moves. If, then, there were only this many parts, but there were differences (*diaphora*) in them

(I mean, for example, if there were several kinds (*genos*) of mouths, stomachs, and sense-organs, and further also of parts for movement), then the number of ways of combining these will necessarily produce several kinds (*genos*) of animals. For the same animal cannot have many different sorts (*diaphora*) of mouth, nor of ears either. So, when all the possible ways of coupling them have been grasped, they will produce kinds (*eidos*) of animals, and as many kinds as there are combinations of the necessary parts" (*Pol.* IV 4 1290^{b}25–37).

Instrumental parts (*organa*): An *organon* is often what we would naturally call an "organ," but just as often it refers to some part of an animal, such as a hand, that we would not call one, or to a craftsman's tools, making "instrument" the best overall translation.

Note 139

In each of the segments all the parts of the soul are present, and they are the same in form as each other and as the whole—as each other, because they are not separable, as the whole soul, because it is not divisible: Reading ἀλλήλοις μὲν ὡς οὐ χωριστὰ ὄντα, τῇ δ' ὅλῃ ψυχῇ ὡς οὐ διαιρετῇ οὔσῃ with Ross for OCT ἀλλήλων μὲν ὡς οὐ χωριστὰ ὄντα, τῆς δ' ὅλης ψυχῆς ὡς οὐ διαιρετῆς οὔσες. The segments are not separable with respect to their capacities, and so are the same in form as each other (I 5 411^{b}24–25), nor is the whole soul divisible with respect to its capacities (though it can be divided into numerically distinct souls), and so the parts into which it is divided are of the same form as it.

Note 140

The starting-point in plants also seems to be a sort of soul: Threptic or nutritive soul is a sort of soul, rather than, for example, a capacity that cannot exist in separation from other capacities, such as perception, because it is the whole soul of plants.

BOOK II

Note 141

Its most common (*koinotatos*) **account:** The one that captures what all souls have in common (II 1 412^{b}4) or the universal they all instantiate (412^{b}10).

Note 142

One kind (*genos*) **among the beings is substance:** *Genos* here, as at I 5 410^{a}18, means "category."

Substance: See I 1 402^{a}8n.

Of this, one sort is substance as matter, which is intrinsically not a this something: "By matter I mean that which, intrinsically, is neither said to be something, nor some quantity, nor anything else by which being is given definition" (*Met.* VII 3 1029^{a}20–21).

Another is shape and form, on the basis of which something is already said to be a this something, and a third, what is composed of these: "By the shape, I

mean the configuration of the perceptible form; and by what is composed of these, the statue—the compound" (*Met.* VII 3 $1029^{a}3$–5).
A this something: See I 1 $402^{a}24$n.

Note 143

Matter is potentiality, whereas form is actuality: See I 1 $402^{a}26$n.
And this is in two ways, as scientific knowledge is, and as contemplating (*to theôrein*) **is:** *Epistêmê* is the acquired inactive state, *to theôrein* the activation of that state in active scientific contemplation of something (II 1 $412^{a}22$–27): "We say that someone who is not contemplating is a scientific knower if he is capable of contemplating" (*Met.* IX 6 $1048^{a}34$–35).
Scientific knowledge (*epistêmê*): (1) Aristotle usually divides sciences into three types: theoretical (contemplative), practical (action-related), and productive (crafts) (*Met.* VI 7 $1064^{a}16$–19, *Top.* VI 6 $145^{a}15$–16). But sometimes a more fine-grained classification is employed, in which sciences previously classified as theoretical (such as physics, biology, and others dealing with the sublunary world) are reclassified as "natural sciences" and distinguished from theoretical sciences in the strict sense (such as astronomy and theology), which deal with the superlunary sphere of eternal things (*Met.* VI 1 $1025^{b}18$–$1026^{a}32$, *Ph.* II 7 $198^{a}21$–$^{b}4$).

(1) In the *De Anima* the term *epistêmê* is typically reserved for the sort of scientific knowledge provided by the theoretical sciences, whether natural or strictly theoretical (*NE* VI 3 $1139^{b}31$–34). Often, though, it is used in the looser sense which encompasses the natural, practical, and productive sciences as well. But to understand what a science of this or any sort is like we must begin a few steps back.

(2) An *affirmation* is the true (or false) predication of a single predicate term A of a single subject term B, either as an affirmation (*kataphasis*) (A belongs to B) or a denial (*apophasis*) (A does not belong to B) (*Int.* 8). What makes a term a single subject term, however, is not that it is grammatically singular or serves as a grammatical subject but that it designates a substantial particular—a canonical example of which is a perceptible matter-form compound, such as Socrates. Similarly, what makes a term a predicate is that it designates a universal (man, pale)—something that can have many particular instances. When the role of predicate is restricted to universals, therefore, while that of subject is left open to both particulars and universals, it is more on ontological or metaphysical grounds than on what we would consider strictly logical ones. Subjects and predicates are thus ontological items, types of beings, rather than linguistic or conceptual ones, and logical principles, such as PNC, are very general ontological principles, truths about all beings as such, or qua beings. Particular affirmations (Socrates is a man) and general affirmations (Men are mortal) have the same subject-predicate form, but when the subject is a universal, the affirmation may itself be either universal (All men are mortal) or particular (Some men are mortal)—that is to say, the predicate may be affirmed (denied) of the subject either universally (*katholou*) or in part (*kata meros*) or, if the quantifier is omitted (Men are mortal), indefinitely (*adihoristos*). General affirmations, as a result, which are the only ones of interest to science

(*Met.* VII 15 1039^{b}27–31), are of four types: A belongs to all B (**a**AB), A belongs to no B (**e**AB), A belongs to some B (**i**AB), A does not belong to all B (**o**AB).

(3) A *science* is a state of the soul that enables its possessor to give demonstrative explanations—where a demonstration (*apodeixis*) is a special sort of deduction (*sullogismos*) from scientific starting-points and a deduction is "an argument in which, certain things having been supposed, something different from those supposed things necessarily results because of their being so" (*APr.* I 2 24^{b}18–20). The things supposed are the argument's premises; the necessitated result is its conclusion; all three are affirmations of one of the four types we looked at. In Aristotle's view, such deductions are *syllogisms* (*sullogismos*, again) consisting of a major premise, a minor premise, and a conclusion, where the premises have exactly one "middle" term in common, and the conclusion contains only the other two "extreme" terms. The conclusion's predicate term is the *major term*, contributed by the major premise; its subject is the *minor term*, contributed by the minor premise. The middle term must be either subject of both premises, predicate of both, or subject of one and predicate of the other. The resulting possible combinations of terms yield the so-called figures of the syllogism:

	First figure		Second figure		Third figure	
	Predicate	Subject	Predicate	Subject	Predicate	Subject
Premise	A	B	A	B	A	C
Premise	B	C	A	C	B	C
Conclusion	A	C	B	C	A	B

Systematic investigation of the possible combinations of premises in each of these figures results in the identification of the *moods* or modes that constitute valid deductions. In the first figure, these are as follows:

Form	Mnemonic	Proof
aAB, **a**BC | **a**AC	**Barbara**	Perfect
eAB, **a**BC | **e**AC	**Celarent**	Perfect
aAB, **i**BC | **i**AC	**Darii**	Perfect
eAB, **i**BC | **o**AC	**Ferio**	Perfect

A mood is perfect when there is a proof of its validity that is *direct*, in that it does not rely on the validity of any other mood. Only first figure syllogisms have perfect moods.

(4) Besides their logical interest as admitting of direct proof, perfect syllogisms in Barbara are also of particular importance to science. First, because "syllogisms that give the why, which hold either universally or for the most part, in most cases are carried out through this figure. That is why it is the most scientific of all; for getting a theoretical grasp on the why is most important for

[scientific] knowledge" (*APo.* I 14 79^{a}20–24). Second, "only through this figure can you hunt for scientific knowledge of something's essence" (79^{a}24–25): essences hold universally, only perfect syllogisms in Barbara have universal conclusions, and definitions of essences, which are scientific starting-points, must hold universally.

(5) Specifically scientific starting-points are of just three types (*APo.* I 10 76^{a}37–^{b}22). Those *special* to a science are definitions of the real (as opposed to nominal) essences of the beings with which the science deals (II 3 90^{b}24, II 10 93^{b}29–94^{a}19). Because these are definitions by genus and differentia (II 13 96^{a}20–97^{b}39), a single science must deal with a single genus (I 7 75^{b}10–11, I 23 84^{b}17–18, 28 87^{a}38–39). Other starting-points (so-called axioms) are common to all or many sciences (I 2 72^{a}14–24, I 32 88^{a}36–^{b}3). A third sort of starting-point posits the existence of the genus with which the science deals, but this may often be left implicit if the existence of the genus is clear (I 10 76^{b}17–18). The source of these starting-points, in turn, is perception and experience, which lead by induction to a grasp by understanding of them: "From perception memory comes to be, and from many memories of the same thing, experience. For, then, memories that are many in number form one experience. And from experience, or from the whole universal that has come to rest in the soul (the one over and above the many, this being whatever is present as one and the same in all of them), comes a starting-point (*archê*) of craft knowledge and scientific knowledge—of craft knowledge if it concerns coming to be (*genesis*), of scientific knowledge if it concerns being" (II 19 100^{a}3–9).

(6) To constitute a *demonstration* a deduction must be a valid syllogism in the mood Barbara, whose premises meet a number of conditions. First, they must be immediate or indemonstrable, and so must be reached through induction. Second, our confidence in them must be unsurpassed: "If we are to have scientific knowledge through demonstration, . . . we must know the starting-points [= definitions of essences] better and be better persuaded of them than of what is being shown but we must also not find anything more persuasive or better known among things opposed to the starting-points, from which a contrary mistaken conclusion may be deduced, since someone who has unconditional scientific knowledge must be incapable of being persuaded out of it" (*APo.* I 2 72^{a}37–^{b}4). Finally, they must be necessary (and so, of course, true) in a special sense: the predicates in them must belong to the subjects in every case, intrinsically, and universally (4 73^{a}24–27): (6a) *In every case:* A predicate A belongs to every subject B if and only if there is no B to which it fails to belong and no time at which it fails to belong to a B: "for example, if animal belongs to every man, then if it is true to say that this thing is a man, it is also true to say that it is an animal, and if the former is the case now, the latter is also the case now" (73^{a}29–31). (6b) *Intrinsically:* A predicate A belongs intrinsically to a subject B just in case it is related to B in one of four ways: (i) A is in the account or definition of what B is, or of B's substance, or essence (73^{a}34–37); (ii) B is a complex subject φB_1, where φ is an intrinsic coincident of B_1—for example, odd number or male or female animal (*Met.* XIII 3 1078^{a}5–11)—and A is in the definition

of φB_1's essence; (iii) A just is B's essence; (iv) A is not a part of B's essence or identical to it but stems causally from it, so that being B is an intrinsic cause of being A (73^{a}34–^{b}24). (6c) *Universally:* A predicate A belongs to a subject B universally just in case "it belongs to it in every case and intrinsically, that is, insofar as it is itself" (73^{b}26–27).

(7) Because intrinsic predicates stem in various ways from essences, the subjects to which they belong must have essences. In other words, they must be *intrinsic beings*, since—stemming as they do from essences—intrinsic predicates identify them or make them clear: "The things said to be intrinsically are the very ones signified by the figures of predication" (*Met.* V 7 1017^{a}22–23). These figures of predication are the so-called *categories*: "Anything that is predicated (*katêgoroumenon*) of something must either be . . . a definition . . . if it signifies the essence . . . or, if it does not, a special attribute (*idion*) [see I 7 189^{b}32n] . . . or one of the things in the definition, or not; and if it is one of the things in the definition, it must signify the genus or the differentiae, since the definition is composed of genus and differentia. If, however, it is not one of the things in the definition, it is clear that it must be a coincident; for a coincident was said to be that which belongs to a thing but that is neither a definition nor a genus nor a special attribute. Next we must distinguish the kinds (*genos*) of predication in which one will find the four mentioned above. These are ten in number: what it is, quantity, quality, relation, when, where, position, having, doing, and being affected. For the coincidents, the genus, the special attributes, and the definition will always be in one of these kinds of predication [or *categories*]" (*Top.* I 8–9 103^{b}7–25). For each of the intrinsic beings in these ten *categories* we can state what it is (*Met.* VII 4 1030^{a}17–24), even if strictly speaking only substances have definitions and essences (5 1031^{a}7–24). Specifying these beings is one of the tasks of *Categories*, where Aristotle explains how beings in categories other than that of substance are ontologically dependent on those in the category of substance. The list of categories itself, however, has a somewhat provisional status, as Aristotle's remark about the category of *having* indicates: "Some further ways of having might perhaps come to light, but we have made a pretty complete enumeration of those commonly spoken of" (*Cat.* 15 15^{b}30-32).

(8) What all four types of intrinsic beings have in common, what makes them worth the attention of someone inquiring into starting-points and causes, is that they are the ontological correlates or truth-makers for scientific theorems—the beings responsible for the necessary truth of those theorems. Moreover, they would seem to be the only sorts of being that can play this role, since they constitute an exhaustive catalogue of the necessary relations that can hold between a subject (A) and something (B) predicated of it: B is part of the essence of A; A is part of the essence of B; B is the essence of A; the essence of A (being A) is an intrinsic cause of (being) B.

Note 144

It is bodies that seem most of all to be substances: "Substance seems to belong most evidently to bodies. That is why we say that animals and plants and their parts are substances, and also natural bodies, such as fire, water, earth, and each thing of this sort, as well as such things, whether all or some, as are parts of these or from which they are composed (for example, the heaven and its parts, stars and moon and sun)" (*Met.* VII 2 1028^{b}8–13; also VIII 1 1042^{a}6–11). Aristotle's own view is somewhat different: "It is evident that even of the things that seem to be substances, most are capacities, whether the parts of animals (for none of them is when it has been separated, and whenever they are separated they are only as matter) or earth, fire, and air (for none of them is one, but instead they are like a heap, until they are concocted and some one thing comes to be from them)" (VII 16 1040^{b}5–10).

And among these, the natural ones: A view with which Aristotle agrees: "But since not all things are substances, rather, those things are substances that are in accord with nature and composed by nature" (*Met.* VII 17 1041^{b}28–30).

Note 145

For these are starting-points for the others: That is, for the non-natural bodies that are the products of craft, since these are made out of the elemental material bodies or compounds of them.

Note 146

Substance is actuality: "What we wish to say is clear by induction from particular cases, and we must not look for a definition of everything, but be able to comprehend the analogy, namely, that as what is building is in relation to what is capable of building, and what is awake is in relation to what is asleep, and what is seeing is in relation to what has its eyes closed but has sight, and what has been shaped out of the matter is in relation to the matter, and what has been finished off is to the unfinished. Of the difference exemplified in this analogy let the activity [= actuality] be marked off by the first part, the potentiality by the second. But things are said to actively be not all in the same way but by analogy—as this is in this or to this, so that is in that or to that. For some are as movement in relation to potentiality, and the others as substance to some sort of matter" (*Met.* IX 6 1048^{a}35–^{b}9).

Note 147

In the same individual scientific knowledge is prior in coming to be: See III 7 431^{a}2n.

Note 148

This sort of body would be one that is instrumental (*organikon*): See I 5 411^{b}23n.

Note 149

We should not inquire whether the soul and the body are one, any more than the wax and the shape, or, in general, the matter of a given thing and that of which it is the matter: "Of all things that have several parts and where the totality of them is not like a heap, but the whole is something beyond the parts, there is some cause of it [being one], since even among bodies in some cases touch is the cause of their being one, in others stickiness, or some other attribute of this sort. . . . What is it, then, that makes the human one and not many—for example, both the animal plus the two-footed? . . . If, as we say, there is on the one hand matter and on the other shape [= form], and the one is potentially and the other actively, then what we are inquiring into will no longer seem to be a puzzle. For this puzzle is the same as would arise if the definition of cloak were the round bronze. For then this name would be a sign of the account, so that the topic of inquiry is, what is the cause of the round and the bronze being one? There no longer appears to be a puzzle, obviously, because the one is matter, the other shape. So what is the cause of this—of what is potentially being so actively—beyond the producer (in the case of things where there is a process of coming to be)? For there is no other cause of what is potentially a sphere being actively a sphere, rather, this was the essence for either of them" (*Met.* VIII 6 1045^{a}9–33).

Note 150
The controlling way is actuality: See I 4 408^{a}6n.

Note 151
This is the essence (*ti ên einai*) of this sort of body: "The *ti ên einai*, the account of which is a definition, is said to be each thing's substance (*ousia*)" (*Met.* V 8 1017^{b}21–23). *Ti ên einai*—literally, "what-it-was-to-be"—is a phrase of Aristotle's coinage, of which "essence," from the Latin verb *esse* ("to be") is the standard translation. The past tense *ên* ("was") may—as in the Latin phrase *quod erat demonstrandum* ("which was to be proved")—stem from an original context (such as a Socratic conversation) in which someone is asked to say or define what X is, and concludes by giving his answer in the past tense to signal that he is giving the answer that *was* asked for (*ên* at VII 4 1030^{a}1 may be a case in point). Apart from that it seems to have no special significance, so we could equally well translate as "the what-it-*is*-to-be."

Note 152
The being for the axe (*to pelekei einai*): See I 4 408^{a}25n.

Note 153
If this were separated from it, it would not still be an axe, except homonymously: "Things are said to be *homonymous* when they have only a name in common, but the account of the substance [= essence] that corresponds to the name is distinct—for example, both a human and a picture are a *zô[i]on*. These have only a name in common and the account of the essence corresponding to the name is distinct. For if we are to say what-it-is for each of them to be an animal, we will give a special account to each" (*Cat.* 1 1^{a}1–6).

Note 154
The seed and the fruit are potentially bodies of this sort: See Introduction p. xxiii.

Note 155
Eye-jelly (*korê*): Sometimes translated as "pupil."

Note 156

Nevertheless nothing prevents some of them at any rate from being separable, because of being the actualities of no body: Namely, the understanding (I 4 408^{b}18n).

Note 157

It is unclear whether the soul is the actualization of the body [1] in this way (*houtôs*) or [2] in the way that a sailor is of a ship: Reading ἢ ὥσπερ with OCT. If we omit ἢ with the mss. we have: "it is unclear whether the soul is the actualization of the body in the way that a sailor is of a ship." The question, though, seems to be analogous to the one that begins *Met.* XII 10 1075^{a}11–13: Ἐπισκεπτέον δὲ καὶ ποτέρως ἔχει ἡ τοῦ ὅλου φύσις τὸ ἀγαθὸν καὶ τὸ ἄριστον, πότερον κεχωρισμένον τι καὶ αὐτὸ καθ' αὐτό, ἢ τὴν τάξιν ("We must also investigate in which way the nature of the whole possesses the good and the best—whether [3] as something separated and intrinsic, or [4] as its order"). For the previous sentences (II 1 413^{a}5–7) have distinguished between parts of the soul that are inseparable from the body, since they are actualizations of its parts (sight and the eye-jelly are examples), and parts—of which the understanding is an example—that are or may be separable from the body because they are not actualizations of any of its parts. The question arises, therefore, of how we should see the whole soul, which includes the understanding, as relating to the body it is in. Two ways are floated, one of which [1] is identified by the demonstrative adverb *houtôs* and the other [2] by being analogized to the relationship between the sailor and the ship. Since the sailor is not the actualization of any part of the ship, it seems reasonable to take [2] to be referring to the parts of the soul that are separable from the body, so that [1] refers to the parts that are inseparable, since they are actualizations of bodily parts. The sentence that follows in XII 10, however, allows that the disjunction between [3] and [4] may be non-exclusive: "Or is it rather in both ways, like an army? For the good of an army is in its order, and is also the general" (XII 10 1075^{a}13–15). Since [1] the inseparable parts are analogous to [4] the order, while [2] the separable parts are analogous to [3] the general, who is himself analogous to the sailor, by reference to whom [2] is explained, we should presumably treat the disjunction between [1] and [2] as non-exclusive too. This would result in our saying that the soul is related to the body both as its actualization (since parts of it are related to parts of the body in this way) and as the sailor is to the ship (since parts of it are related to the body in this different way).

In the way that a sailor is of a ship: A ship typically has many sailors, organized to perform in harmony the various functions involved in sailing it: "Sailors are dissimilar in their capacities (for one is an oarsman, another a captain, another a lookout, and others have other sorts of titles), it is clear both that the most exact account of the virtue of each sort of sailor will be special to him and that there will also be some common account that fits them all alike. For the preservation of the ship while sailing is a function of all of them, since this is what each of the sailors desires" (*Pol.* III 4 1267^{b}20–27). For simplicity, however, we may think, as Aristotle does, of a ship small enough to be sailed by just one sailor, since this is a closer analogue to the case of body and soul. When the sailor enters the ship from outside—as the understanding does the body (Introduction pp. xxiv–xxvii)—he transforms the "dead" ship, incapable of autonomous sailing, into a functional ship, possessed of the capacity (= first actuality) to sail, which is the analogue of the alive but sleeping animal. It is in this way that he is its actualization.

Note 158

It is from what is non-perspicuous but more evident that what is perspicuous and more knowable in accord with its account comes about: "It advances the work to proceed toward what is more knowable. For learning comes about for all in this way—through things by nature less knowable toward ones that are more knowable. And just as with things in the sphere of action the work is to begin from things that are good for each and make things that are wholly good, good for each, so too the work here is to begin from things more knowable to oneself and make the ones that are by nature knowable, knowable to oneself. But the things that are knowable and primary for particular groups of people are often only slightly knowable and have little or nothing of the being in them. Nonetheless, beginning from things that are barely known but known to ourselves, we must try to know the ones that are wholly knowable, proceeding, as has just been said, through the former" (*Met.* VII 3 1029^{b}3–12).

What is perspicuous (*to saphes*): Perspicuousness (*saphêneia*) is associated with explanation, which is ultimately from starting-points: "Beginning with things that are truly stated but not perspicuously, we proceed to make them perspicuous as well. . . . That is why even politicians should not regard as peripheral to their work the sort of theoretical knowledge that makes evident (*phaneron*) not only 'the that' but also 'the why'" (*EE* I 6 1216^{b}32–39). The same point is made at *NE* I 7 1098^{b}7–8 by noting that when we have a correct definition of the starting-point of politics or political science much else will "at the same time become evident (*sumphanê*) through it." *Saphês* and *akribês* ("exact") are often equivalent in meaning (I 1 402^{a}2n).

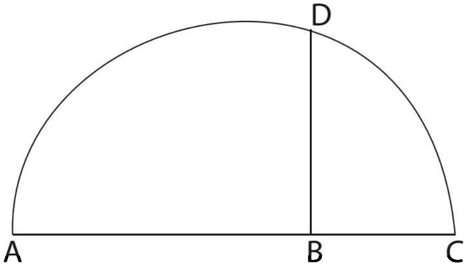
What is perspicuous and more knowable in accord with its account (*kata ton logon gnôrimôteron*): Or "better known from the point of view of reason." But at II 2 413^{a}14 *logos* must mean "account." What is more knowable in accord with its account is what is revealed when the account in question not only makes the definiendum clear but also states its cause.

Note 159

The defining account must not only make clear "the that," which is what most definitions state, but must also include the cause and make it evident: See Introduction, pp. xxxvii–xxxix.

Note 160

The one that states that squaring is the finding of the mean states the cause of the thing: Euclid II.14 shows how to construct a square (or equilateral rectangle) equal in area to a given non-equilateral rectangle. The figure below is the crucial one in the construction:



Here AB and BC are the sides of the given rectangle X. The square on BD is equal in area to X. Euclid VI.13 shows that AB : BD :: BD : BC, making BD the mean, which explains why the square on BD is equal in area to X.

The mean states the cause of the thing: "Since we think we have scientific knowledge when we know the cause, and there are four sorts of causes (one the essence; one that if certain things hold it is necessary that this does; another, what first caused the thing to move; fourth, the for-the-sake-of-which), all these are shown through the middle term" (*APo*. II 11 94^a20–24).

Note 161

Touch can be separated from the other perceptual capacities: See III 12 434^b21–29.

The other perceptual capacities (*tôn allôn aisthêseôn*): The noun *aisthêsis* sometimes refers, as here, to (1) a perceptual capacity (or sense), sometimes to (2) the activity of perceiving some perceptible object.

Note 162

The cause due to which plants have nutritive soul and all animals perceptive soul, we shall state later: See III 12 434^a22–30, 434^b9–25.

Note 163

We see this happening, where other differentiae (*diaphora*) of the soul are concerned, in the case of insects when they are cut in two: *Diaphorai* in the technical sense are differentiae, which are special to a species or genus (*Met*. X 3 1054^b24–1055^a2, 4 1055^a26), and figure along with the genus in the definition of the species. Sometimes, however, they are simply the different features that distinguish one kind of thing from another, without necessarily suggesting that the kinds are genera or species in the strict sense or that the differences are differentiae. The Greek term *diaphora* in parenthesis signals what is going on.

Note 164

If an animal has perception, then it has imagination and desire as well: See III 11 433^b31–434^a10.

Note 165

And it alone admits of being separated: Reading ἐνδέχεται with OCT. Ross reads ἐνδέχεσθαι ("and it alone seems to admit of being separated"). See II 2 413^{a}31–32 and Introduction, pp. xxiv–xxvii.

Note 166

The remaining parts of the soul are not separable, as some people claim: The reference may be to Plato, who seems to allocate different parts of the human soul to different parts of the body: "They [the created gods] imitated him [the Demiurge]: having taken the immortal starting-point of the soul [≈ Aristotle's *nous*], they proceeded next to encase it within a round mortal body [= the head], and to give it the entire body as its vehicle. And within the body they built another kind (*eidos*) of soul as well, the mortal kind . . . in another place in the body, away from the other. . . . And since one part of the mortal soul was naturally superior to the other, they built the hollow of the trunk in sections. . . . The part of the mortal soul that exhibits courage and spirit, the one that is victory-loving, they settled nearer the head, between the midriff and the neck, so that it might listen to reason and restrain by force the part consisting of appetites . . . which they settled in the area between the midriff and the boundary toward the navel. In the whole of this region they constructed something like a trough for the body's nourishment. Here they tied this part of the soul down like a beast, a wild one, but one they could not avoid sustaining along with the others if a mortal race were ever to be" (*Ti.* 69c5–70e5).

Note 167

All of these belong to some animals (*zô[i]ôn*), **some to some, and only one to others:** No animal has only one of the parts that have been mentioned, since perception, which all of them have, presupposes nourishment. Understanding, however, is the only one possessed by the primary god, since he—though alive, and so surely possessed of a soul—is "the active understanding that is an active understanding of active understanding" (*Met.* XII 9 1074^{b}34–35). The believing part is special to human beings, but cannot be possessed without the other parts.

What the cause is, we must investigate later: See III 12–13.

Note 168

The activity of those things that are capable of acting on something seems to occur in that which is affected and suitably disposed: "In the cases where what comes to be is some other thing beyond the use, in those cases the activity is in what is being produced—for example, the activity of building is in what is being built, the activity of weaving is in what is being woven, and similarly in the other cases, and in general the movement is in what is being moved. But in all the cases where there is not some other work beyond the activity, the activity is in the agents—for example, the seeing is in the seer, the contemplating in the contemplator, and the living in the soul (which is why happiness is also in it, since it is

a certain sort of living). So it is evident that the substance and the form are activity" (*Met.* IX 8 1050^{a}30–^{b}3).
The result is that it will be an account and a form: See I 1 403^{a}25n.

Note 169
Of the capacities of the soul we mentioned, some living things have all of them, as we said: At II 2 413^{b}32–414^{a}5.

Note 170
To plants only the nutritive part (*to threptikon*) **belongs, whereas to others it belongs together with the perceptual part** (*to aisthêtikon*): These parts, to recall, are the starting-points of the correlative capacities—the parts whose presence in a soul make its possessor capable of being nourished or capable of perceiving (I 5 411^{b}27–30).

Note 171
Desire comprises appetite (*epithumia*): Defined below (II 3 414^{b}5–6).
Spirit (*thumos*): See I 1 403a17n.
And wish (*boulêsis*): See III 9 432^{b}5n.

Note 172
Touch is a perception of what is nourishing: Since the tasteable is "a sort of tangible thing" (II 10 422^{a}8).

Note 173
Flavor is one of the objects of touch: "Even where the pleasures of taste are concerned, not all of them are attractive to wild beasts—for example, those perceived by the tip of the tongue. But those perceived by the throat are, which is a feeling more like touch than taste. That is why gluttons pray not for a long tongue, but for the gullet of a crane—as did Philoxenus, the son of Eryxis" (*EE* III 2 1231^{a}12–17).

Note 174
We must speak perspicuously about these matters later on: See II 10–11.
Speak perspicuously: See II 2 413^{a}12n.

Note 175
Where imagination (*phantasias*) **is concerned, it is unclear:** What is unclear is whether living things that have touch also have imagination.
And must be investigated later on: See III 3 427^{b}14–429^{a}9, 11 433^{b}31–434^{a}21.

Note 176
Others also have the thinking part and also understanding (*nous*)**—for example, human beings and anything else there may be that is similar or more estimable:** "There exist other things that are far more divine in nature even than human beings—the most evident ones, certainly, being those from which the cosmos is composed [= the celestial spheres]" (*NE* VI 7 1141^{a}34–^{b}1). These spheres are eternally living divine beings, with souls somewhat like our own (*Cael.* II 12 292^{a}14–22).
More estimable: See I 2 404^{b}5n.

Note 177

In the latter case there is no figure beyond the triangle and the others that are next in order, and in the former there is no soul beyond the ones we mentioned: "In the case of things among which there is priority and posteriority, what is over them cannot be something beyond them. For example, if two is the first of the numbers, no number will exist beyond the species of numbers. Nor, similarly, will there be a [geometrical] figure beyond the species of figures" (*Met.* III 3 999^{a}6–10); "In things where there is priority and posteriority, there is not some common thing beyond these and separate from them. For, then, there would be something prior to the first, since the common separate thing would have priority because, if the common one were destroyed, the first would be destroyed. For example, if multiplication by two is the first case of multiplication, the multiplication predicated of all of them in common cannot be separate from them, since it would then be prior to multiplication by two" (*EE* I 8 1218^{a}1–8).

Note 178

Indivisible species: One that cannot be any further divided into sub-species.

Note 179

Touch is present without the other sorts of perception: See III 12 434^{b}21–29.

Note 180

Some have the part capable of causing movement with respect to place, whereas others do not: See I 5 410^{b}19–20n, II 2 413^{b}2–4.

Note 181

Thought (*dianoia*): *Dianoia* is often contrasted with the body (*Pol.* II 9 1270^{b}40, VII 16 1335^{b}16), making "mind" seem a natural translation of it. But unlike the mind, which includes perception, imagination, belief, knowledge, desire, virtues of character, and other such things, *dianoia* is contrasted with each of these. It is not perception, because all animals have that, whereas "the majority of animals do not have *dianoia*" (*DA* I 5 410^{b}24). It is not imagination, because, as we might put it, *dianoia* is propositional, or operates on things that can be true or false, affirmed or denied (*Pol.* II 11 1273^{a}22), whereas imagination is a representational state that is more like perception, more "imagistic." Thus "what affirmation and denial are in the case of thought, that, in the case of desire, is just what pursuit and avoidance are" (*NE* VI 2 1139^{a}21–22). Unlike belief and knowledge, however, "thought is in fact not yet affirmation" (VI 9 1142^{b}12–13), making it natural to think of it, or some of it anyway, as the process of reasoning that can culminate in a belief or affirmed proposition (*Pol.* IV 15 1299^{a}30 and V 8 1307^{b}35 are nice examples). And this is further evidenced by the fact that the virtues of thought, which are theoretical wisdom and practical wisdom (*NE* I 13 1103^{a}4–6), are (respectively) those of the scientific sub-part and the rationally calculative sub-part, of the part of the soul that has reason (VI 1 1139^{a}5–12). At the same time, the fact that scientific knowledge includes both demonstrative reasoning and a grasp of scientific starting-points by the understanding implies that not all thinking need be in any sense inferential, since understanding is non-inferential—a grasping of something rather than something process-like (*Pol.* VII 13 1325^{b}20 is a good example). *Dianoia* is not desire, because, while desire can cause animal movement, without thought, as it does in the case of non-rational animals, "thought by itself . . . moves nothing" (*NE* VI 2 1139^{a}35–36). As a result, it is not character (*Pol.* VIII 2 1337^{a}38–39), since the latter, as involving desire, is cultivated by habituation, whereas *dianoia* is cultivated by teaching (*NE* II 1 1103^{a}14–18)—hence the common contrast between thought and character (*Pol.* III 11 1281^{b}7).

Note 182

Among the ones capable of passing away, those that have rational calculation also have all the rest: Of those incapable of passing away, the divine celestial spheres have a capacity for continuous circular movement in a fixed orbit (*Met.* XII 7 1072^{a}21–23), for desire (23–27), for understanding (27–30), and—as the present text suggests—for rational calculation.

Some do not even have imagination: See III 3 428^{a}8–11.

Whereas others live by imagination (*phantasia*) alone: "The other animals live by appearances (*phantasiais*) [= products of imagination] and memories, and have but a small share in experience, whereas humankind lives by craft knowledge and rational calculations" (*Met.* I 1 980^{b}25–28). See also III 11 434a5–11.

Note 183

Concerning the theoretical understanding a distinct account is required: See III 4–7.

Note 184

Anyone who is going to make an investigation into these parts must grasp what each of them is, and thus must inquire about the things that follow, and about the others: See I 1 402^{b}16–403^{a}2.

The things that follow . . . the others: "The things that follow" are the intrinsic coincidents of a part of the soul that are not constituents of its essence but are demonstrable from its essence. "The others" are affections that belong to a living thing due to the fact that its soul has the relevant part (I 1 402^{a}9–10).

Note 185

Prior in account: A is prior in account to B if and only if the account of B involves that of A, while the account of A does not involve that of B (*Met.* VII 1 1028^{a}35–36, XIII 2 1077^{b}3–4).

Activities and actions are prior in account to capacities: "Well, that [activity] is prior in account is clear. For what is in the primary way potential is potential because it admits of becoming active—for example, by capable-of-building I mean what is capable of [actively] building, and by capable-of-seeing what is capable of [actively] seeing and by capable-of-being-seen what is capable of [actively] being seen. And the same account also applies in the other cases, so that it is necessary for the account and the knowledge of the one to precede the account and knowledge of the other" (*Met.* IX 8 1049^{b}12–17).

Note 186

The functions of nutritive soul are generation and the making use of nourishment: See II 4 416^{a}19n.

Note 187

It is the most natural function in those living things that are complete and not disabled or spontaneously generated, to produce another like itself: "Those who cannot be without one another necessarily form a couple, as female and male do for the sake of generating offspring (they do not do so because they deliberately choose to, but, like other animals and plants, because the urge to leave behind something of the same kind as themselves is natural)" (*Pol.* I 2 1252^{a}26–30).

Those living things that are complete: See Introduction, pp. xvii–xix.

And not disabled (*pêrômata*): *Pêrôma* is often translated as "deformation" or as "mutilation." But, unlike either a deformation or a mutilation, a *pêrôma* must have an effect on functioning and may be a part of a thing's essential nature. Being female, for example, is "like a natural disability (*anapêrian phusikên*)" (*GA* IV 6 775^{a}15–16), affecting the ability to reproduce: "The female exists in virtue of a particular incapacity, in being unable to concoct seed out of the nutriment in its last stage (which is either blood or the analogous part in the bloodless animals) owing to the coldness of her nature" (I 20 728^{a}18–21). On the other hand, someone may be *pêros* (blind, for example) not by nature but simply as a result of an accident or a condition such as drunkenness (*NE* III 5 1114^{a}25–28).

Or spontaneously generated: Aristotle thinks that insects (*HA* V I 539^{a}21–26), testaceans (V 15 547^{b}18–32), and eels (VI 16) come about exclusively in this way.

In order that they may partake in the eternal and divine insofar as they can: "In this way everything mortal is preserved, not by always being absolutely the same, as the divine is, but by virtue of the fact that what is departing and withering with age leaves behind in us something else new, of the same sort that it was. It is by this means, Socrates, Diotima said, that the mortal partakes of immortality, both body and everything else; and what is immortal partakes of it in a different way" (Plato, *Smp.* 208a6–b4).

Note 188

The soul is likewise a cause in three of the ways distinguished: "Something is said to be a cause if it is: [1] That from which, as a component, a thing comes to be—for example, as the bronze is of the statue, the silver of the bowl, and also the kinds (*genos*) of these. [2] The form or paradigm, that is, the account of the essence, and kinds (*genos*) of this (for example, of the octave, the ratio 2 : 1 and number in general), and the parts included in the account. [3] Further, that from which the change or the resting from change first starts—for example, the deliberator is a cause [of the action] and the father of his child and in general the producer is a cause of the thing produced and the change maker of the change made. [4] Further, the end, and this is the for-the-sake-of-which—for example, health of someone's taking walks. For why does he take walks? 'In order that he may be healthy,' we say" (*Met.* V 2 1013^{a}24–^{b}3; also *Ph.* II 3 194^{b}16–35).

Note 189

That from which the movement comes: Reading ὅθεν ἡ κίνησις with Ross for OCT ὅθεν ἡ κίνησις αὕτη (“that from which this movement derives”).

Note 190

The actuality is the account (*logos*) of what is potentially: The soul is “the first actualization of a natural body that has life potentially” (II 1 412^{a}27–28). The actualization of what is potentially is its account or form (I 1 403^{a}25n). Therefore, the soul is a formal cause.

Note 191

Those of plants just like those of animals: Reading καθάπερ with Ross for OCT καὶ καθάπερ (“and those of plants just like those of animals”)—which carries the implication that all natural bodies, not just those of animals and plants, are instruments of soul. An alternative is to read τὰ ἔμψυχα σώματα (“the animate bodies”) for the OCT and the mss. τὰ φυσικὰ σώματα (“the natural bodies”).

Note 192

For up and down are not the same for all things as they are for the universe: See I 3 406^{a}27–29n.

As the head is of animals, so the roots are of plants: See *PA* IV 10 686^{a}25–687^{a}2 (quoted in I 5 404^{b}5–6n).

Note 193

It is the soul rather than fire that is the unconditional cause of nourishment and growth: Since the soul uses fire (heat) as an instrument in the digestive process (II 4 416^{a}20n).

Note 194

There is a limit and an account (*logos*) of size and growth for things that are put together by nature: “A straight nose is the most beautiful, but one that deviates from being straight and tends toward being hooked or snub can nevertheless still be beautiful to look at. Yet if it is tightened still more toward the extreme, the part will first be thrown out of due proportion, and in the end it will cease to appear to be a nose at all, because it has too much of one and too little of the other of these opposites. The same holds of the other parts as well” (*Pol.* V 9 1309^{b}23–30).

And these are characteristic of soul but not of fire: Because the soul is a formal cause (II 4 415^{b}12–14).

And of the account (*logos*) rather than of the matter: Again, as its contrast with matter suggests, *logos* should be understood not as the account but as the form defined by it (I 1 403^{a}25n).

Note 195

The same capacity of the soul is nutritive and generative: “Just as the things that come about by craft come about because of instruments, though it would be truer to say that they do so because of the movements of these, and this is the activity of the craft (for by craft we mean the shape [= form] of the things that come about though existing in something else [namely, the understanding of the craftsman]), the same is true of the capacity of the nutritive soul. And just as later on in the case of mature animals and plants this soul produces growth from the nourishment, using heat and cold as its instruments (for it is in these that its movement is found, and each thing comes about in accord with a certain account), so also from the very start it puts together what is by nature coming about. For the matter by which this grows is the same as that from which it was first put together, and so the producing capacity is also the same as at the start (but greater than it). If, then, this is the nutritive soul, it is also the generative one, and it is the nature of each, present in all animals in plants, whereas the other parts of the soul are present in some living things but not in others" (*GA* II 4 740^{b}25–741^{a}3).

Generative: This capacity of soul is discussed not in *De Anima* but in the *Generation of Animals.*

Note 196

Water is nourishment for fire: Aristotle is presumably thinking not of pure water but of oil, which in his view is a mixture of water and air (*Mete.* IV 8 385^{b}4, 10 388^{a}32).

Note 197

It seems, then, that it is especially among the simple bodies that one nourishes and the other is nourished: As the case of fire suggests (II 4 416^{a}10–12).

Note 198

Others think the reverse, as we said: At II 4 416^{a}21–22.

Nourishment changes and gets concocted (*pettesthai*): On concoction (*pepsis*) (= digestion), see Introduction, pp. xviii–xix.

In every case change is into the opposite or into the intermediate: "Change that is not coincidental is not found in all things but only in contraries, intermediates, and in contradictories. We may be convinced of this by induction. Something that changes either changes from an underlying subject to an underlying subject, or from what is not an underlying subject to what is not an underlying subject, or from an underlying subject to what is not an underlying subject, or from what is not an underlying subject to an underlying subject (I mean by 'underlying subject' what is made clear by an affirmation), so that there must be three sorts of changes. For there is no change from what is not an underlying subject to what is not an underlying subject, because (since the terms are neither contraries nor contradictories) there is no opposition" (*Met.* XI 11 1067^{b}12–21).

The intermediate (*to metaxu*): "We say that those things are intermediates into which what changes must change earlier—for example, if we proceed from the highest string to the lowest by the smallest intervals, we will come sooner to the intermediate notes, and, in colors, if we proceed from white to black we will come earlier to purple or gray than to black, and similarly in the other cases" (*Met.* X 7 1057^{a}21–26); "Intermediates are all in the same genus, intermediate between contraries, and composed of the contraries" (1057^{b}32–34).

Note 199

The nourishment is affected (*paschei*) **by the thing being nourished, but not it by the nourishment:** This is because "the activity of what can act on something and cause movement comes about in what is affected" (III 2 426^{a}4–5). Thus nourishment is caused to move by the nutritive soul, and so by the plant or animal whose soul—or part of whose soul—it is (I 4 408^{b}13–15).

Just as the carpenter is not affected by his material, but it by him: The carpenter has the form of the product present in his understanding as a second potentiality: he has acquired the understanding of it, but is not activating it. When he activates it, it moves his hands, and his hands move the instruments or tools, in such a way that the form gets transferred from his understanding to the material: "The shape and the form are produced from the carpenter through the movement in the matter. And his soul in which the form is and his scientific knowledge move his hands or some other part in a movement of a particular sort, different when the product is different, the same when it is the same, and the hands move the instruments and the instruments move the matter" (*GA* I 22 730^{b}14–23). Similarly, the plant or animal being nourished already has its form. In digestion or concoction, this form is transferred to the nourishment by nutritive soul, using heat and cold as its instruments (II 4 416^{a}19n), with the result that the plant or animal can assimilate it.

Note 200

The carpenter, though, merely changes (*metaballei*) **from inactivity to activity:** See II 5 417^{a}30–^{b}16.

Note 201

Insofar as the nourishment is concocted, like is nourished by like: Once the un-concocted nourishment—or nourishment in its first state—has been concocted by nutritive soul, and turned into nourishment in its final state, it has taken on the form of the living thing whose soul it is, and so can be absorbed by that thing: "The final matter is that of what is most of all the substance" (*Met.* XII 3 1070^{a}20).

Note 202

The being for nourishment (*trophê[i]*)**, however, is distinct from the being for a growth-producer** (*auxêtikô[i] einai*): See I 4 408^{a}25n.

Note 203

A this something and a substance: See I 1 402^{a}24n.

Note 204

Something of the same sort as what is being nourished: Namely, an offspring (II 4 415^{b}1n).

Note 205

{But since the end . . . the same sort as itself}: ἐπεὶ δ’ ἔστι τρία,τὸ τρεφόμενον |416^{b}20| καὶ ᾧ τρέφεται καὶ τὸ τρέφον, τὸ μὲν τρέφον ἐστὶν ἡ |^{b}21| πρώτη ψυχή, τὸ δὲ τρεφόμενον τὸ ἔχον ταύτην σῶμα, ᾧ |^{b}22| δὲ τρέφεται, ἡ τροφή is transposed with Ross, as indicated.

Note 206

But what it is nourished by is twofold, just like what a ship is steered by, namely, the hand and the rudder: The analogue of the hand is nutritive soul, that of the rudder is the heat nutritive soul uses as an instrument in concoction or digestion (II 4 416^{a}20n). On the central role of the heart and blood in this process, see *Juv.* 3 469^{a}2–10.

Note 207

We must speak perspicuously about it later: See II 2 413^{a}13n.

In the appropriate accounts: A reference to the lost *On Nourishment* (*Peri trophês*) or *On Growth and Nourishment* (*Peri auxêseôs kai trophês*), which is also referred to in *GA* V 4 784^{b}2, *PA* II 3 650^{b}10, II 7 653^{b}14, III 14 674^{a}20, IV 4 678^{a}19, and perhaps *Mete.* IV 3 381^{b}13.

Note 208

Perception comes about in being moved and affected, as has been said: See I 5 410^{a}25–26.

Being moved (*kineisthai*): See I 1 403^{a}26n.

Since it seems to be a sort of alteration: See II 4 415^{b}24.

Note 209

Our universal accounts concerning affecting and being affected: In *GC* I 7.

Note 210

A puzzle arises, though, as to why perception of the perceptual capacities (*tôn aisthêseôn*) **themselves does not also take place:** Here the perceptual capacities (II 2 413^{b}7n) are or include the perceptual organs.

There is perception either intrinsically or of their coincidents: See I 1 402^{a}8n.

Note 211

The perceptual part is not active, but only potentially so: See I 2 402^{a}25–26n.

Note 212

Movement is a sort of activity, although an incomplete one, as has been said elsewhere: At *Met.* VIII 6 1048^{b}29–35 (quoted in III 7 431^{a}6–7n).

Note 213

Everything is affected and moved [in way F] by an agent (*hupo tou poiêtikou*) **that is actively** (*energeia[i]*) **[F]:** The *poiêtikos* is literally the thing capable of producing (in this case) an affection or movement of sort F because it is itself actually or actively F.

Note 214

In one way like is affected by like and in another by unlike, as we said: At II 4 416^{a}29–^{b}9.

Note 215

For just now we were speaking about potentiality and actuality in a simple way: Reading νῦν γὰρ ἁπλῶς ἐλέγομεν with OCT and taking the reference to be to II 5 417^{a}6–14. If we read νῦν γὰρ ἁπλῶς λέγομεν ("for at the moment we are speaking") with the mss., we will think that (relatively) simple speaking continues until 417^{b}29–30, which promises yet further refinements later on.

In a simple way (*haplôs*): See I 2 404^{a}28n.

Note 216

The human [species] (*ho anthrôpos*) **is among the scientific knowers:** Noun phrases consisting of the definite article plus a noun ("The N") are ambiguous in English, since they can be either singular terms referring to unique particulars ("The dog bit me," "The man looked at me fiercely") or generic terms ("The bat is a nocturnal creature," "The human is a predatory animal," "The potato is indigenous to South America"). The same ambiguity is present in Greek, as Aristotle is aware (*Met.* VII 10 1035^{b}27–31). Here *ho anthrôpos* is a generic noun phrase referring to the human species.

Note 217

The first is a scientific knower because his genus, and his matter, is of the requisite sort: Because the genus is the underlying subject of which the differentiae are predicate, and matter is an underlying subject, genus and matter are analogous (*Met.* V 28 1024^{b}8–9, X 8 1058^{a}37–^{b}3).

Note 218

In a third way, there is the person who is already actively contemplating, the one who is actually and in the full sense scientifically knowing this letter A (*tode to A*): "It is only coincidentally that sight sees universal color, because this [particular instance of] color that it sees is *a* color, and so what the grammarian theoretically grasps, namely, this [particular instance of] A, is *an* A" (*Met.* XIII 10 1087^{a}19–21).

In the full sense (*kuriôs*): See I 4 408^{a}6n.

Note 219

Both of the first two, then, are potential scientific knowers: Omitting the OCT addition of ὄντες, ἐνεργείᾳ γίνονται ἐπιστήμονες ("who come to be active scientific knowers").

But [1] the one because of having been altered (*alloiôtheis*) **through learning, that is** (*kai*)**, by frequent changes from the contrary state, whereas [2] the other, [because of having been altered] in another way [changes] from the state of having scientific knowledge of arithmetic or grammar, but not activating it, to activating it:** The text looks at the potential that X (a newborn and uneducated human) and Y (an educated human adult) have to be scientific knowers in [3] the full sense, or actively, from the perspective of the alterations they need to have gone through to activate or actualize the potentiality or capacity they have. So it describes X—and so by implication Y—using the aorist passive participle *alloiôtheis*.

For X's potentiality to be a scientific knower to have been actualized, X has to have been altered in way [1], by means of education and frequent changes from the contrary state, whereas Y has to be altered in way [2]. The difference between [1] and [2] reveals the difference between their results, which are X's potentiality to be a scientific knower on the one hand and Y's on the other.

Note 220

It is not correct to say that what thinks (*phronoun*), **when it is thinking** (*phronê[i]*), **is altered:** For the translation of *phronein*, see I 2 404^{b}5n.

Note 221

A person who learns and acquires scientific knowledge, proceeding from being [a scientific knower] potentially by the agency of one who is actually [a scientific knower], should not be said to be affected: Omitting ὥσπερ εἴρηται ("as was stated") after "affected" with Ross. For the distinction here, which is not the one between affection [1] and affection [2], has not been previously introduced or discussed. The idea is that when a student X learns from a teacher Y, who is actually what Y is potentially, X, rather than being affected (that is, qualitatively changed), is having his capacities developed in a way that is natural for them, just as Y is when he activates his already acquired knowledge. The change that X undergoes is thus being included along with Y's as a case of being affected only in way [2]. That is why Aristotle sometimes denies that it is really an alteration—or the result of being affected in way [1]—at all: "The acquisition of scientific knowledge at the start is neither a coming to be nor an alteration, since we are said to know and to understand (*phronein*) as a result of our understanding's having come to rest and being still, and there is no coming to be of being at rest, or indeed of any change (*metabolê*) at all" (*Ph.* VII 3 247^{b}9–13).

Or else we should say that there are two ways of being altered, one a change to conditions of lack (*sterêtikas diatheseis*): "[1] Something is said to lack (*sterêsis*) something in one way if it does not have one of the attributes that a thing naturally has, even if this thing itself does not naturally have it—for example, a plant is said to lack eyes. [2] It is said to lack it in another way if what it or its genus naturally has, it itself does not have—for example, a human who is blind and a mole lack sight in different ways, the one in contrast to its genus, the other intrinsically. [3] Further, if it does not have what it is natural for it to have when it is natural for it to have it. For blindness is a lack, but a person is not blind at any and every age, but only if he does not have sight when it is natural for someone to have it. Similarly, a person is said to be blind if he does not have sight in that in which, on the basis of which, in relation to which, and in the way in which, is natural. [4] Further, the forceful taking away of a given thing is said to be a lack of it" (*Met.* V 22 1022^{b}22–32).

Note 222

The first change in a perceiver is brought about by the parent: This occurs in human embryogenesis when the fetus acquires—perhaps prenatally—the capacity to perceive (*Pol.* VII 16 1335^{b}24–26).

And when it has been born it already (*êdê*) has—just like scientific knowledge—perception: That is, it has perception in the way [2] in which someone who is already—notice *êdê* at II 5 417^{a}25—a scientific knower has scientific knowledge. The point of analogy is that we are born with our perceptual capacities in a state analogous to that of acquired but inactive scientific knowledge.

Note 223

Something is similarly said to be actively perceiving and contemplating: "Flavor brings the perceptual faculty, which pre-existed only potentially, into activity. For perceiving is not like learning but like contemplating" (*Sens.* 4 441^{b}21–23).

Note 224

Active perception is of particulars, whereas scientific knowledge is of universals: "To perceive is of necessity to perceive a particular, whereas scientific knowledge is the knowing of the universal" (*APo.* I 31 87^{b}37–39). II 5 417^{a}28–29n shows that the contrast is more complex than the present statement makes it seem—as, in a different way, does 417^{b}26–27.

Particulars (*tôn kath' hekaston*), **universals** (*tôn katholou*): (1) *Ta kath' hekasta* are often things that are severally one in number and jointly many (*Met.* II 4 999^{b}34–1000^{a}1), whereas *ta katholou* belong to many numerically distinct particulars (VII 13 1038^{b}11–12). (2) Sometimes, though, what is *kath' hekaston* is what is less universal than something else. Thus while true particulars are indefinable (15 1039^{b}27–29, 1040^{a}27–^{b}4), it is "easier to define *to kath' hekaston* than the universal" (*APo.* II 13 97^{b}28), and a definition of a universal "divides it into *kath' hekasta*" (*Ph.* I 1 184^{b}2–3), where these are things that are particular in the sense of being "indivisible in species" (*PA* I 4 644^{a}30–31).

Universals are in a way (*pôs*) in the soul itself: Explained at III 4 429^{a}27–29, 8 431^{b}26–432^{a}10. Aristotle is not claiming that universals are psychological or mental entities.

Note 225

The sciences that deal with perceptible objects: Here the term *epistêmê* is used in the looser sense which encompasses the natural sciences, but also—more relevantly—the practical and productive ones, which do, of course, have to deal with perceptible particulars (II 1 412^{a}10n).

Note 226

But about these matters there will be an opportunity to speak perspicuously later on as well: The reference is unclear. If it is to the way in which contemplation is up to us, it may be the discussion in III 4–5; if it is to the sciences dealing with perceptual particulars, it may be to the discussion of practical understanding in III 7 and 10.

Note 227

What is said to be potential is not simple, but rather while there is [a] what is so in the way we would say that a boy is capable of being a general, there is also [b] what is so in the way that a man of the right age is capable of being one, and

[c] it is the same way with what is capable of perceiving: The distinction between [a] and [b] seems to be like the distinction between being a scientific knower in way [1] and being a scientific knower in way [2]: the man is capable of being a general either because he has the right level of experience (≈ [2]); the child is the sort of thing who is capable, through learning and experience, of acquiring the capacity that the man already has (≈ [1]). This being so, [c] must be understood as distinguishing between the stage in embryogenesis where the embryo has not yet received the perceptual capacity from its parent (= [a]) and the stage where the perceptual capacity is possessed but not yet active (= [b]).

Note 228

But since there is no name for the difference (*diaphora*) **between these** (*toutôn*), **although it has been determined about them that they are distinct and in what way they are distinct:** The reference of *toutôn* must be to [a] and [b]—or rather to the sorts of alteration or affection involved in them. In [a] we have someone who by being altered in way alt-(i) or affected in way aff-(i) acquires a capacity; in [b] we have someone who by being altered in way alt-(ii) or affected in way aff-(ii) has that capacity activated. The difference between these ways was determined at II 5 417^a30–$^b16$.

We must go on using "being affected" and "being altered" as if these names had their prevalent meaning (*kuriois onomasin*): A *kurios onoma* is a name (word) used with its prevalent or standard meaning or signification, in contrast to one used metaphorically, or in a non-standard way that requires a gloss or explanation, or one that is a coined term, or one altered in some way, and so on (*Po.* 21 1457^b1–4). "As if" adds the requisite qualification: we must use them in awareness of the distinctions that have been argued for in this chapter.

Names (*onomasin*): An *onoma* is not always what we call a name, but a word more generally, or—when contrasted with a verb (as at *Rh.* III 2 1404^b5)—a noun.

Note 229

A given perceptual capacity is discerning about its special perceptibles, and does not make errors about whether there is color or whether there is sound: This presupposes, however, that the perceptual capacities are functioning properly in conditions that do not impede their achieving their end (*NE* VII 12 1153^a15). For people "do not perceive what is presented to their eyes, if they happen to be deep in thought, or afraid, or hearing a lot of noise" (*Sens.* 7 447^a15–17) and cannot perceive accurately what is not presented at the right distance (447^a21–24) or in the right way: "each thing is more readily perceptible when presented simply by itself than when mixed with others—for example, pure rather than unmixed wine, or honey, or a color, or a single rather than one in a chord—because they tend to obscure one another" (447^a17–20). In the following passage, both sets of conditions are summed up: "Every perceptual capacity is active in relation to its perceptible object, and completely active when the perceptual capacity is in good condition in relation to the finest (*kalliston*) of the objects falling under the perceptual capacity (for this seems to be above all what complete activity consists in—whether it is the perceptual capacity itself we say is active, or the subject in which it exists, makes no difference). In the case of each perceptual capacity, then, the activity that is best is the one whose subject is in the best (*ariston*) condition in relation to the strongest (*kratiston*) of the objects falling under the perceptual capacity" (*NE* X 4 1174^{b}14–19). *Kalliston* and *kratiston*, more specific in their connotation than the *ariston* used to characterize the state of the perceptual capacity or the perceiving subject, suggest that the most perceptible objects possess both clarity and liveliness or forcefulness. The fact that they "fall under" the perceptual capacities, like the subsequent use of "sights and sounds" as examples (1174^{b}27–28), makes it plain that they are special perceptibles. But even when conditions of these sorts are met, room for error still remains. For "perceptions persist after the external perceptible object has gone" (*Insomn.* 2 460^{b}2–4), with the result that things appear to us as they do "when the perceptible object produces the movement [in the perceptual capacity], but also when the perceptual capacity is moved by itself, provided it is moved in a similar way to the one in which the object falling under the perceptual capacity moves it" (460^{b}22–25). When, for example, we "have looked for a long time at a single color—such as white or green—any object to which we shift our gaze appears to be of that very color" (459^{b}11–13). So we can be deceived even about whether the color is there in front of our eyes. It is presumably with such cases in mind that Aristotle later modifies his bold claims about inerrancy. Perception of the special perceptibles is "true or has the least possible degree of falsity" (*DA* III 3 428^{b}18–19), at any rate "as long as the perception is present" (428^{b}27–28), that is to say, while the perceptible object continues to affect the perceptual capacity in the right way.

Note 230

Those that are said to be common are movement, rest, number, shape, and size: *Mem.* 1 450^{a}9–10 implies that the passing of time should be added to this list: "It is necessary that magnitude and movement should be known in the same way as time." Or perhaps it is already included under movement, since "time is this—the number of movement with respect to before and after" (*Ph.* IV 11 219^{b}1–2).

Since things like these are special to no perceptual capacity but common to all (*pasais*): It is not obvious that shape and size are perceptible by all the perceptual capacities, and elsewhere Aristotle suggests that something can be a common perceptible without meeting this condition: "Magnitude and shape, roughness and smoothness, and furthermore the sharpness and bluntness found in solid bodies are common to all the perceptual capacities, or if not to all, at any rate to sight and touch" (*Sens.* 4 442^{b}5–7). What he is claiming, then, is that the common perceptibles are perceptible by more than one special perceptual capacity. See also III 1 425^{a}14–30.

Note 231

A thing is said to be coincidentally perceptible: Coincidental perceptibles are discussed more fully in III 1 425^{a}21–^{b}4.

Note 232

You perceive the son of Diares coincidentally, because it is coincident with the pale (*tô[i] leukô[i]*), **which you perceive [intrinsically]:** *To leukon* is probably not the universal *pallor*, but *to ti leukon*, a particular instance of pale, whose presence in a particular substance—in this case, the son of Diares—makes it true that it coincides with that substance and that the substance is predicatively pale (*Cat.* 2 1^a27–28). *To leukon* is intrinsically perceptible. The son of Diares—because he coincides with *to leukon*—is coincidentally perceptible.

Note 233

It is the special objects that are perceptible in the full sense (*kuriôs*): See I 4 408^a7.

And it is to these that the substance (*ousia*) **of each given perceptual capacity is by nature related:** *Ousia* here is essence (I 1 402^a8n).

Note 234

There is a certain nature in it that is the same in them both of them and in the [eternal] body above: See Introduction, pp. xxi–xxiii.

Note 235

One and the same [affection] also belongs to it: Namely, luminosity.

Note 236

Light travels and arrives: Reading γιγνομένου with Ross and most mss. for OCT τεινομένου ("light travels and extends toward"). Compare *Sens.* 6 446^a20–23: "A puzzle might be raised as to whether perceptible objects or the movements proceeding from perceptible objects . . . when these are activated always arrive (*aphikneisthai*) first at a middle point, as odor evidently does, and also sound."

Note 237

The transparent is colorless not when it is actually transparent, but rather when it is potentially so: When a colorless medium is actually transparent it takes on the color of the colored object that is being seen through it. So it is only colorless when it is potentially transparent. For if it were not transparent then it could not take on whatever color a visible object happens to have.

Note 238

A snuffed wick (*mukês*): *Mukês* can also refer to a possibly phosphorescent tree fungus.

Horn: Reading κέρας with OCT. Ross and some mss. read κρέας ("flesh").

Note 239

The cause due to which these things are seen is a topic for another account: Aristotle also refers to the phenomenon of phosphorescence at *Sens.* 2 437^b5–7, but his extant works contain no account of it.

Note 240

This is what the being is for color: See I 4 408^a25n.

Note 241

If the intermediate space became a void: That is, if there were no transparent medium such as air or water present.

We would see an ant in exact detail (*akribôs*): See I 1 402^{a}2n.

Note 242

The cause of this will be clear later: II 11 422^{b}34–423^{a}1 explains why the need for a medium is not apparent in the case of touch and taste; 423^{b}1–26 argues that the medium is flesh.

Note 243

The cause of these things too will be stated later: At II 9 421^{b}13–422^{a}6.

Note 244

When a sound actively comes about it is always in something: See II 8 419^{b}18–22.

Note 245

As we said, a blow to any random things is not [what produces] a sound: At II 8 419^{b}5–7.

Note 246

It is not the air or the water that is in control of (*kurios*) **sound:** See I 4 408^{a}6n.

Note 247

Just as if someone were to strike a blow to a heap—or rather a whirl (*hormathon*)**—of sand that is in rapid motion:** The *hormathon* is a so-called sand-devil or small tornado which, due to the rapidity with which the sand particles in it are moving, is sufficiently like a solid object that it can be struck.

Note 248

From air that has become one: Reading ἀπὸ τοῦ ἀέρος with some mss. for OCT ἀέρος (“air having become one”).

Note 249

Light is always reflected (for otherwise there would not be light everywhere, but instead there would be darkness outside the sunlit area): If there were no reflected light, only those things directly lit (for example, by the sun) would be illuminated. But this is not so, since many objects (mirrors, water) clearly do reflect light.

Although it is not reflected as it is from water or bronze or anything else that is smooth, so as to produce a shadow, by which we define (*horizomen*) **the light:** When light is reflected from a smooth or polished surface onto an object O, O has a distinct shadow, as it does not when the light is reflected from other sorts of things, even though reflection is in fact occurring. It is this shadow that enables us to define the light, that is, the light-source, or the source of the (non-reflected) light. Light in general is not defined in this way (II 7 418^{b}19–20).

Note 250

What is void is correctly said to be in control of hearing: Slightly misleading. What is void or empty is correctly said to be in control of hearing because the people who say this (mistakenly) think that where air is there is a void, and air produces hearing.

Note 251

Because of its loose texture it makes no sound unless what is struck is smooth: "Something is smooth because its parts lie somehow in a straight line, rough because some stick up above the others" (*Cat.* 8 10^{a}22–24). Hence a smooth flat surface, being in the requisite sense one or unified, causes the loose-textured air to hold together so as to form a more unified mass.

Note 252

The organ of hearing has connate air: Reading ἔστιν ἀήρ with Ross for OCT ἀήρ.

Connate (*sumphuês*) **air:** That is, air that is inside the organ of hearing and is a natural part of it.

Note 253

It is not in every part that it has air, but the part that is going to be moved and is animate: Reading οὐ γὰρ πάντῃ ἔχει ἀέρα τὸ κινησόμενον μέρος καὶ ἔμψυχον with the mss. for OCT οὐ γὰρ πάντῃ ἔχει ἀέρα, ἀλλὰ τὸ κινησόμενον μέρος καὶ ἔμψοφον ("for it is not everywhere that the part that is being moved and can sound"). Compare II 8 420^{b}31.

It is not in every part that it has air: That is, connate air.

Note 254

The air inside the ears, though, has been walled in so as to be unmoving, in order that it may perceive in exact detail all the differentiae (*diaphora*) **of movement:** The connate air inside the ear must be unmoving if it is to discern accurately the movements that are sounds for the same reason that the eye-jelly must be neither white nor black if it is to discern color accurately (II 11 424^{a}5–10).

Note 255

But it is not an indication of whether we hear or not that the ear always has an echo, like a horn: Reading ἀλλ᾽οὐ with Ross and Shields for OCT and mss. ἀλλὰ καὶ.

Note 256

Sound is the movement of something that can be moved in the way in which things bounce back from a smooth surface when someone strikes it: The simile is apparently to be understood in this way: when a smooth surface is struck by someone, the air that is at it, since it is one continuous mass, bounces off it, in the way that a plate on a table does if the table is struck, eventually moving the connate air in the ear.

Note 257

The sharp (*to oxu*) **and the dull** (*to baru*): *To oxu* in the case of sound is high-pitched, and *to baru*, low-pitched, flat, or bass. To better preserve the analogy with touch *to baru* is translated as "dull."

Note 258

The sharp moves the perceptual capacity a lot in a little time: "It is the rapid sound that is sharp, as those who do arithmetical harmonics say" (*Top.* I 15 107^a15–16). The sound is rapid because it is produced by rapid vibrations of a tight string, producing a sharp, high, piercing sound. Slower vibrations of a slacker string produce flat, bass, or low sounds.

Note 259

Not, of course, that the sharp is rapid and the dull slow: We do not hear the sharp as rapid and the flat as slow, so we should not identify these perceptual qualities with the movements of the perceptual capacity (the drum of a functional ear), which actually are fast or slow. Rather, the movements of the eardrum are the matter of sound, whereas the perceptual qualities are its form (I 1 403^a29–$^b12$). Aristotle is apparently criticizing the Pythagoreans and (perhaps) Plato, whom he takes to be identifying the kinetic qualities with the perceptual ones: "In general, let us suppose that sound is the blows struck by air through the ears to the brain and the blood and transmitted to the soul, and that hearing is the movement caused by the blows that begins in the head and ends in the place where the liver is situated, And let us suppose that whenever the blows are rapid the sound is high, and that the slower the blows the duller the sound" (*Ti.* 67b2–6; also 80a3–4).

Note 260

Pitch variation (*apotasin*): The word *apotasis* occurs only here and—unless Balme is correct in reading ἀπόστασις instead—at *HA* V 14 545^a17: "For the most part . . . the voice of males differs from that of females in that the note of the males' is deeper than that of the females' in animals, where the voice admits of *apotasis.*" Its precise meaning—"loudness" is suggested by Ross—is a bit unclear.
Articulation (*dialekton*): "Articulation (*dialektos*) is the differentiation (*diarthôsis*) of the voice by the tongue" (*HA* IV 9 535^a30–31).

Note 261

Those in the Achelous: "Fishes are voiceless, since they have neither lungs nor windpipe nor pharynx, but they emit certain sounds and squeaks, which is called their voice, as, for example, do the gurnard, the sciana (for these make a grunting sort of noise), and the caprus in the river Achelous" (*HA* IV 9 535^b14–18).
The Achelous: A river in western Greece that empties into the Ionian Sea.

Note 262

It uses breath both for the internal heat as something necessary (the cause will be stated elsewhere): "Life and the possession of soul involve a certain sort of heat. For not even concoction [= digestion], due to which nourishment comes about for animals, comes about without soul and heat, since it is fire that does all the work. . . . But fire passes away in two ways, . . . namely, extinction and exhaustion. . . . Exhaustion is due to excessive heat. . . . So if it is going to continue it must be cooled. . . . And in the case of animals that have blood and a heart, the ones that have a lung receive the air and produce the cooling effect by breathing in and out" (*Juv.* 14 474^{a}25–16 475^{b}19).

Internal heat: That is, vital heat. See Introduction, pp. xvii–xxi.

And also for voice, so that there may be wellbeing: Aristotle sometimes, as here, distinguishes *phonos* ("sound in general") from the *phônê* ("cry" or "voice") of an animate being. Sometimes too he distinguishes *phônê* from *logos* ("rational speech," "language"): "A *phônê* is an indicator of what is pleasant or painful, which is why it is also possessed by the other animals (for their nature goes this far: they not only perceive what is pleasant or painful but also indicate them to each other). But rational speech (*logos*) is for making clear what is beneficial or harmful, and hence also what is just or unjust" (*Pol.* I 2 1253^{a}10–15). Similarly, he often distinguishes the wellbeing of animals from the *eudaimonia* or happiness that consists in contemplation and requires the possession of an understanding—"of the other animals, none is happy, since they in no way share in contemplation" (*NE* X 8 1178^{b}27–28). Here, however, he seems to lump together *phônê* and *logos*, *eudaimonia* and animal wellbeing.

Note 263

It is due to the lung that footed animals have more heat than others: Because the air breathed in by the lung cools the heart and blood, allowing it to be hotter without becoming exhausted as a result (II 8 420^{b}20n).

Note 264

What is first to need the [effects of] breathing is in fact the region around the heart: Because the primary or necessary function of breathing is to cool the blood, not to produce voice (II 8 420^{b}21–22).

Note 265

As we have said, not every sound made by an animal is voice: At 420^{b}11–14.

But what does the striking must be animate: Reading ἔμψυχόν with Ross and the mss. for OCT ἔμψοφόν. Compare II 8 420^{a}7.

And must involve some sort of imagination: Imagination is discussed in III 3 427^{b}27–429^{a}9.

Note 266

Why fish do not have a pharynx is a topic for another account: Animals with blood need to have its temperature controlled in some way to prevent its vital heat from being either extinguished (too cold) or exhausted (too hot). In blooded land animals the air breathed in by pharynx and lungs control the temperature. In fish the water plays this role, so that they do not need a pharynx, but rather gills with which to take it in (*Juv.* 15 474^{b}25–16 476^{a}16, *PA* III 6 669^{a}2–5).

Note 267

Human taste is more exact because it is a sort of touch, and this perceptual capacity is most exact in a human being: "To hear and smell exactly is [1] in one way to perceive as well as possible all the differences in the underlying perceptible subject, and [2] in another to hear and smell from a distance. As for [1] discerning the differences correctly, the cause of this is the perceptual organ, just as in the case of sight, which must be pure itself as must the membrane around it. . . . Exactness of perception [in the cases of sight and hearing] at a distance is possessed by a human being to a lesser degree in proportion to his size than (one might almost say) any other animal. The cause is that his perceptual organ is pure, least earthy and corporeal, and he is by nature the thinnest skinned of all animals for his size" (*GA* V 2 781^{a}14–^{b}22). The difference between [1] and [2] also applies to sight (V I 780^{b}15–17), whereas only [1] has any application to touch. The claim about touch, then, is that in human beings it is a more exact discerner of differences than the other perceptual capacities. This is consistent with its discerning a smaller variety of differences, and so being less conducive overall to knowledge, than other perceptual capacities, such as sight: "All humans by nature desire to know. An indication of this is our liking for the perceptual capacities. For even apart from their utility, these are liked because of themselves—and most of all the one because of the eyes. For it is not only in order to do an action, but even when we are not going to do anything whatsoever, that we choose sight over (one might almost say) all the others. The cause of this is that of all perceptual capacities it enables us to know most fully and makes clear many differences" (*Met.* I 1 980^{a}20–27).

Human taste is a sort of touch: Perceptual capacities are defined or individuated by their special perceptibles, which is why Aristotle can be confident that a perceptual capacity that perceives odor must be smell (II 9 421^{b}21–23). Yet, though taste and touch have distinct special perceptibles, taste is a sort of touch because, like touch, it operates by contact, and because its special perceptible, flavor, is "a sort of tangible object (*hapton ti*)" (II 10 422^{a}8).

Note 268

That is why he is also the wisest (*phronimôtaton*) of the animals: We do not become wise primarily because of evidence gained by touching things. In epistemological terms, sight and hearing are more conducive to wisdom than touch: "The perceptual capacities that operate through external media, such as smell, hearing, and sight, are characteristic of animals capable of movement. In all that have them they exist for the sake of preservation, in order that they may perceive their food before they pursue it, and avoid what is bad or destructive, while in those that also happen to have wisdom (*phronêseôs*), they exist for the sake of doing well, since they make us aware of many differences, from which arises wisdom concerning both intelligible things and things done in action. Of these, sight is intrinsically superior as regards the necessities of life, while hearing is coincidentally so as regards understanding. For the different qualities that the capacity of

sight reports are many and multifarious because all bodies are colored, so that it is to the highest degree by this perceptual capacity that the common perceptible objects are perceived (I mean, figure, magnitude, movement, and number), whereas hearing reports only differences in sound, and in a few cases differences in voice too. Coincidentally, however, it is hearing that plays the biggest part as regards wisdom. For speech (*logos*) is a cause of learning, not intrinsically, but coincidentally; for it consists of words, and each of the words is a symbol. Because of this, of those who have been deprived from birth of one or other of these perceptual capacities, the blind are wiser than deaf mutes" (*Sens.* 1 436^{b}18–437^{a}17). The connection between wisdom and having an exact sense of touch, by contrast, is physiological in nature rather than epistemological. A perceptual capacity's exactness is determined by the "purity" of—by the absence of heavy earth in—the associated perceptual organ (II 9 421^{a}20n): the less earthy or corporeal the perceptual organ is, the more easily it is moved by small differences in the perceptible object. The organ of touch, however, involves the flesh as a whole as well as the perceptual organ proper, which lies near the heart (*Sens.* 1 439^{a}1–2). Purity in that region, however, and in the blood, is what makes for increased wisdom or intelligence (I 4 408^{b}19n, II 4 416^{a}4n).
Wisest (*phronimôtaton*): See I 2 404^{b}5n.

Note 269
Members of the human race are naturally well-disposed (*euphueis*) **or naturally ill-disposed** (*aphueis*) **depending on this perceptual organ and on no other:** Something is *euphuês* if it is well (*eu*) grown (*phuê*), or favored by nature in capacities, appearance, or some other respect: the situation of a body can be *euphuês* (*PA* III 4 666^{a}14), as can that of a city (*Pol.* V 3 1303^{b}8); an animal can be *euphuês* as regards a function, such as reproduction (*GA* II 8 748^{b}8, 12), or the acquisition of a capacity, such as bearing the cold (*Pol.* VII 17 1336^{a}20), becoming a poet (*Po.* 17 1455^{a}32), or a musician (*EE* VIII 2 1247^{b}22).
Depending on this perceptual organ and on no other: Because of touch's unique underlying physiology (II 9 421^{a}22n).

Note 270
They have taken their names from the latter in accord with a likeness in the things: Retaining ἀπὸ τούτων, which OCT secludes.

Note 271
What cannot possibly have an odor at all: Reading παρὰ τὸ ὅλως ἀδύνατον ἔχειν ὀσμὴν with Hamlyn and most mss. for OCT παρὰ τὸ ἀδύνατον <εἶναι> μηδ' ὅλως ἔχειν ὀσμήν.

Note 272
They appear to be destroyed as a result of the same strong odors as a human being is: At II 13 435^{b}8–13, it is not the animal but the perceptual capacity that is destroyed by strong odors, the animal being destroyed only coincidentally by what goes along with the odor. Thus, at *Sens.* 5 444^{a}30–32, it is not the odors themselves

but the tangible fumes or vapors that are destructive: "Animals are destroyed by these [foul-smelling odors] just as human beings get headaches from, and are often destroyed by, the fumes (*atmidos*) of charcoal." This may also be what is presupposed here.

Note 273

Odor belongs to what is dry, just as flavor does to what is wet, and the perceptual organ of smell (*to osphantikon*) is potentially like that: This is consistent with the claim at III 1 425^{a}5 that the perceptual organ of smell is composed either of water or air, both of which are *wet* elements for Aristotle, water being cold and wet, air hot and wet (*GC* II 3 330^{a}30–^{b}7). The organ is actually wet but potentially dry. It becomes actually dry by contact with odor. The perceptual organ of taste, by contrast, is actually dry but potentially wet (II 10 422^{a}34–^{b}10).

Note 274

Color, by contrast, is not seen in this way, namely, by its being mixed in, nor by effluences: See II 7 418^{b}15.

Note 275

Nothing, though, produces a perception of flavor (*chumou*) without moisture: *Chumos* also means "juice," and is cognate with the verb *cheô*, which means "dissolve" or "make liquid."

Note 276

One thing is said to be entirely invisible (as with other cases of impossibility), while another is said to be so if it is natural for it to be visible but it is not visible or slightly visible: These correspond to two of the ways in which something can lack something: "Something is said to lack something in one way if it does not have one of the attributes that a thing naturally has, even if this thing itself does not naturally have it—for example, a plant is said to lack eyes. In another way if what it or its genus naturally has, it itself does not have—for example, a human who is blind and a mole lack sight in different ways, the one in contrast to its genus, the other intrinsically" (*Met.* V 22 1022^{b}22–27).

Destructive of taste: As the very bright and the very loud are of seeing and hearing.

Note 277

The drinkable and the undrinkable, though, seem to be a starting-point: Starting-point, presumably, in the account of taste.

Of both there is a sort of taste (*geusis*): *Geusis* here probably does not refer to taste in the sense of flavor, since water, though preeminently drinkable, "tends to be flavorless" (*Sens.* 4 441^{a}3–4). The thought is rather that both drinkable and undrinkable liquids are in a way perceptible by the perceptual capacity of taste in that their liquidity activates it.

The latter is bad and destructive of taste (*tês geuseôs*): Reading τῆς γεύσεως with Hamlyn and the mss., which OCT secludes. As at II 9 422^{a}32, *tês geuseôs* (genitive of *geusis*) refers to the perceptual capacity, not to flavor.

The drinkable is an object common to touch and taste: To be drinkable something must be moist or liquid, and what is moist or liquid is a tangible thing.

Note 278

For in the latter case there is contact with the moisture that is there first: Reading ταύτῃ with OCT. Ross reads αὕτη ("this latter perceiving comes about by contact with the moisture that is there first").

Note 279

The kinds of flavor, as in the case of colors, are contraries when simple, namely, the sweet and the bitter: "Just as the [intermediate] colors result from the mixture of white and black, so the flavors result from the mixture of sweet and bitter" (*Sens.* 4 442ᵃ12–13).

Note 280

And yet, as we also said earlier: At 4 II 11 23ᵃ2–4.

Note 281

The differentiae that determine the elements, namely, hot, cold, dry, and wet, of which we have spoken earlier in our account of the elements: The reference is to *GC*, especially, II 3 330ᵃ30–ᵇ7. See Introduction, p. xvii.

Note 282

The mean is capable of discerning (*kritikon*), since in relation to each extreme it becomes the other: "When people are involved in dispute they take refuge in a judge. Going to a judge, however, is going to justice, since a judge is meant to be, as it were, justice ensouled. Also, they seek a judge as an intermediary—in fact, some people call judges 'mediators,' on the supposition that a person who can hit the mean is the one who will hit what is just. Hence what is just is a mean in some way, if indeed a judge is also one" (*NE* V 4 1132ᵃ19–24). *Kritikon* also means "capable of judging." The idea is that what is equipoise between contraries or opposites can correctly or justly discern or register the differences between them, whereas what is already tipped toward one of them is biased in its favor, and so fails to discern or judge accurately.

Since in relation to each extreme it becomes the other: "Just as what is equal is greater when compared to what is smaller and smaller when compared to what is greater, so the mean states are excessive both in feelings and in actions when compared to the deficiencies and deficient when compared to the excesses" (*NE* II 8 1108ᵇ13–19).

Note 283

Those that are destructive [of the perceptual capacity]: This does not mean that they do away with the capacity altogether, so that afterward the animal will never be able to exercise it again. What they do is temporarily dissolve the ratio in it, wherein its ability to discern the excessively sweet or hot objects accurately or exactly lies (III 2 426ᵃ27–ᵇ7).

Note 284

The perceptual capacity for each [sort of object] is affected by what has color, flavor, or sound: What has color, flavor, or sound is a particular thing, X, which, like the particular signet-ring that imprints the seal on the wax, is a matter-form compound.

But not insofar as each is said to be things in question, but insofar as each is of such-and-such a sort: It is not insofar as X is the particular matter-form compound that is said to have color, flavor, or sound—it is not insofar as X is the subject of those affections—that it affects the perceptual capacity, but insofar as it is of such-and-such a sort, namely, having a certain color, flavor, or sound. Similarly, the signet-ring imprints its seal not because it is the particular matter-form compound that it is, but because of having the formal features that it does—formal features that it can share with other particular rings with the same seal on them.

And in accord with the ratio (*logos*): See III 2 426^{a}27–^{b}7.

Note 285

What does the perceiving would be a spatial magnitude: What does the perceiving is the perceptual organ which, in order to take on a perceptual quality, must be spatially extended.

But surely neither the being for what is capable of perceiving nor the perceptual capacity is a spatial magnitude: The being for the perceptual organ is its form or essence (I 4 408^{a}25n).

Note 286

Dissolved (*luetai*): "To resolve" (for example, a puzzle) is also *luein.*

Note 287

The cause of plants not perceiving the hot and cold they are affected by is their not having a mean: See II 11 424^{a}2–10.

Nor a starting-point of a sort that can receive the forms of perceptible objects: Namely, perceptual soul.

On the contrary, they are affected [by the form] along with the matter: Perception of hot and cold involves receiving their perceptual forms without the matter. But when a plant is affected by hot and cold tangible objects it is the entire object—the matter-form compound as a whole—that affects it and not, as in perception, its formal component alone. Plants have nutritive soul only.

Book III

Note 288

The simple bodies: That is, the elements.

The organ of smell (*hê osphrêsis*) **is composed of one or the other of water or air:** Hence the organ is actually wet (water being cold and wet, air hot and wet) but potentially dry (II 9 422^{a}6–7). This account initially seems inconsistent with the view proposed in *Sens.* 2: "[1] *Tên osphrêsin* is of fire (*puros*). For as *hê osphrêsis* is actually, so *to osphrantikon* is potentially. [2] For the perceptible object is what makes active the perceptual capacity, so that this must have belonged to it beforehand. Now odor is a smoke-like vapor, and smoke-like vapor arises from fire. [3] That is why the perceptual organ of smell (*to tês osphrêseôs aisthêtêrion*) has its special place in the region of the brain. For cold matter [of which the brain is composed] is potentially hot" (438^{b}20–27). But the inconsistency is one of terminology and focus rather than substance. First, *hê osphrêsis* is the organ of smell in *DA* but the activity of smelling in *Sens.*, where, as at *DA* II 9 421^{b}32 and 422^{a}7, *to osphrantikon* is the correlative organ. So [1] means not that the organ of smell is composed of fire, but that the smellable is fire. [2] then explains that in order for hot, dry (or fiery) smellable things to activate the perceptual capacity of smell the perceptual organ must be actually cold and wet but potentially hot and dry. This is consistent, obviously, with the *DA* view that the sense organ must be composed of either water or air. *Sens.* simply focuses on the correlative drying power that must be present in odor if it is to produce actual smelling. [3] then uses [2] to locate the organ of smelling in the region of the cold brain—a view not found in *DA*.

All the perceptual capacities are possessed by those animals that are not either incomplete: See Introduction, pp. xvii–xix.

Or disabled: See II 4 415^{a}27n.

Note 289

But neither, however, can there be some special perceptual organ for the common perceptibles, which [, then,] we perceive coincidentally (*kata sumbebêkos*) **by means of each perceptual capacity:** This seems to flatly contradict II 6 418^{a}8–11, where it is stated that the common perceptibles are perceived intrinsically. There are essentially three ways of resolving the conflict: (1) Insert *ou* ("not") before *kata sumbebêkos*. (2) Treat *kata sumbebêkos* as ambiguous—in II 6 it has its strict sense, explicated at 418^{a}20–24, whereas here it has a weaker sense, merely distinguishing the *primary* intrinsic objects of a special perceptual capacity (color, sound, odor, etc.) from the *secondary* ones (movement, rest, shape, etc.), which are also perceived intrinsically. (3) Treat the sentence as expressing not Aristotle's view but one targeted for refutation, by reading the second clause as expressing a consequence of the idea expressed in the first. By inserting "[, then,]" I have implicitly opted for (3) as the least problematic. For (1) has inadequate textual authority and (2) requires *kata sumbebêkos* to be used in its supposed weaker sense here, but in its strict or narrow sense a few lines later at III 1 425^{a}24 and 425^{a}27, which is hardly likely.

Note 290

We perceive all these by movement . . . and by the special objects: The claim is that we perceive all the common perceptibles by movement and by the special perceptibles—which must mean not that we perceive them in two ways by movement on the one hand and by the special perceptibles on the other, but that we perceive them in one way, namely, by perceiving movement and the special perceptibles together. For a special perceptible capacity cannot be activated except by its special perceptible.

We perceive all these by movement: This movement could be (1) the movement or alteration caused in a perceptual organ by a perceptible object; (2) the movement of the perceiver as, for example, he scans a visible object, or feels around a tangible one, or hears the variation in sound caused by the movement of its source relative to the perceiver (the Doppler effect); or (3) the movement of some external perceptible object. Of these three options, (1) seems to face the most decisive objections. For it makes it difficult to explain how we could perceive rest by non-movement, since a resting perceptible object also causes such movement, otherwise it would not be perceived. On the positive side, though hardly outweighed by the negative, it would help explain how we perceive movement (of a perceptible object) by movement (of the perceptual organ)—as seems to be implied by the claim that we perceive *all* common perceptibles by movement. (2) The movement of the perceiver, on the other hand, must it seems be part of the story if, as *Mem.* 1 450^{a}9–10 (quoted in II 6 418^{a}19n) suggests, time is a common perceptible object. For then the following text supports it: “Time does not exist without change; for when our own thoughts do not alter, or we do not notice them alter, it does not seem to us that time has passed. . . . If, then, it happens that we do not think there is any time when we do not distinguish any change, but the soul seems to remain in one indivisible [state], but when we do perceive and distinguish a change, then we do say that some time has passed, it is evident that without movement and change time does not exist” (*Ph.* IV 11 218^{b}21–219^{a}2). Similarly, (3) the movement of an external perceptible object must also be part of the story, since in his discussion of place (location), Aristotle claims that place “would not be a subject of inquiry if there were not movement with respect to place” (4 211^{a}12–13).

For example, [1] magnitude by movement, and so also [2] shape, for shape is a sort of magnitude, [3] rest by non-movement, [4] number by negation of continuity: Start with [4] and with continuity rather than its negation. One way of being one is being continuous, and of the things that are unconditionally continuous or most so by nature, the thing that is “more one and prior is what has a more indivisible and simple movement” (*Met.* X 1 1052^{a}19–21). Presumably, then, we see or feel the continuity of a thing, and so, its oneness, by seeing or feeling it move as one connected whole (whether visual or tangible or—when we employ sight and touch—both). Since number (plurality) is the contrary of oneness or unity, we see or feel it by seeing or feeling the discontinuity of things, whose unity we perceive in the way specified. Turn now to [2] shape. What is most one is “what is a whole and what has a certain shape and form, and most so if it is like this by nature and not by force, as things are that are glued or nailed or tied together, but has within itself the cause of its own continuity. And it is like this because its movement is one and indivisible in place and in time” (1052^{a}22–26). So we perceive shape (or a shaped magnitude) by seeing or feeling a shape that is preserved over time (which brings in movement) or while the thing that has it moves, and no doubt also when we move with respect to it. [3] is now presumably straightforward enough not to require specific comment. But what about [2]? How do we perceive movement by movement? If we perceived movement by sight alone, we might think that it was an exclusively visual phenomenon like color itself. But since we perceive it by sight and touch (and perhaps by other perceptual capacities too), we are able to get a more adequate epistemic grasp on what movement itself is, namely, a thing common across the different perceptual modalities. III 1 425^b4–9 seems intended to make this very point.

For each perceptual capacity perceives one (*hen*): This is intended to support the claim that (P) we perceive all the common perceptibles by movement and by the special perceptibles. So we should ask what *hen* would have to mean (or refer to) in order to do so. Since some special perceptible capacities perceive more than one special perceptible, *hen* cannot mean "exactly one special perceptible object." Nor, for the same reason, can it mean "one or more" such objects, since the fact that the special perceptible capacities can have more than one special perceptible offers no support for (P). If, on the other hand, *hen* means "(at least) one common perceptible object," then it does support (P). For if there were a special perceptible capacity that did not perceive any common perceptible, we would not perceive these by the special perceptibles, that is, by all of them, and so there would be common perceptibles that were not common to *all* the special perceptible capacities, as II 6 418^a19—perhaps too bluntly—asserts.

Note 291

It is clear that it is impossible for there to be a special perceptual capacity for any of these—for example, for movement: The subsequent argument considers two possibilities: [1] Suppose we perceive a movement M_1 by a perceptual capacity C_1, and a movement M_2 by C_2, where C_1 is supposedly special to movement, whereas C_2 is not. This is like when we perceive what is sweet by color. But in the latter case we have both a special perceptual capacity for color and one for sight, enabling us to know the one (sweet) by the other (for example, red) when they occur together at the same time (constant conjunction had led us to associate them, as III 1 425^b3–4 suggests). But C_1 is supposed to be special to movement, while C_2 is not. So the two cases are not analogous. [2] The other possibility is that we perceive M_1 by C_1 as we now perceive by sight that the son of Cleon is pale. But then M_1 is a coincidental object of C_1, which cannot therefore be special to movement, since special perceptibles are intrinsic to their perceptual capacities (II 6 418^a8–11). Since [1] and [2] are both excluded, the argument concludes that there is no special capacity for the common perceptible objects (425^a28).

Note 292

But for the common perceptibles we already have a perceptual capacity that is common (*aisthêsin koinên*), **not coincidentally:** The perceptual capacity referred to could be: (1) the so-called common perceptual capacity or common sense (*koinê aisthêsis*), C, or (2) the capacity CS, common to the special perceptual capacities, to discern the common perceptibles. Telling against (1) are the following considerations: (a) No other passage in Aristotle characterizes the common perceptibles as perceptible by something other than the special perceptible capacities. (b) Why, if the perception of special perceptibles is minimally liable to error (II 6 418^{a}14–15), and if the common perceptibles are special to—or perceived non-coincidentally by—C, is the perception of them especially liable to it (III 3 428^{b}22–25) and in the way that II 1 425^{b}3–4 suggests? (c) In all other mentions of C it is referred to by a phrase that includes the definite article *hê* and in which the adjective *koinê* precedes the noun *aisthêsis.* It seems reasonable, then, to take the actual reference to be to CS, which is *koinê* because it is common to the special perceptual capacities. See also III 7 431^{b}5n.

Not coincidentally (*ou kata sumbebêkos*): But if the reference is to CS, what is *ou kata sumbebêkos* must be the fact that the special perceptual capacities have a common or shared capacity to perceive the common perceptibles. And the explanation of this, in turn, must lie in the non-coincidental connection between the special perceptibles and the common ones adverted to at III 1 425^{a}16–19 and discussed in the associated note.

Note 293

We see the son of Cleon: Reading τὸν Κλέωνος υἱὸν ἡμᾶς ὁρᾶν, which OCT secludes.

Note 294

Since the common perceptibles belong in the objects of another perceptible capacity as well, this makes it clear that each of them is something distinct: The presence of, for example, shape, among tangible objects as well as among visible ones, makes it clear that shape is something distinct from the strictly visible objects and from the strictly tangible ones.

Note 295

It must either be by sight that someone perceives that he sees or by a distinct (*hetera[i]*) **[perceptual capacity]:** The reference of the pronoun *hetera* is unspecified, but its gender together with the remainder of the argument make it clear that it is to a distinct *perceptual capacity.* So the issue is this: By what perceptual capacity do we perceive that we are actively seeing? Since when we are seeing, we are aware that we are, there must be some capacity that enables us to be so. That it must be a perceptual capacity, and the awareness a sort of perception, is less obvious but is clearly Aristotle's view: "Since, though, each particular perceptual capacity has on the one hand something special and on the other something common (*koinon*)—for example, seeing is special to the capacity of sight and hearing to the capacity of hearing and the same way for each of the others—there is also common capacity that accompanies all of them by which someone also perceives that he is seeing and hearing. For it certainly is not by sight that he sees that he sees" (*Somn.* 2 455^{a}12–17). See also *DA* II 2 427^{a}1–2n.

Note 296

If someone is to see the thing that sees, the primary thing that sees will also have color: Reading εἰ ὄψεταί τις τὸ ὁρῶν, καὶ χρῶμα ἕξει τὸ ὁρῶν πρῶτον with Ross and the mss. for OCT εἰ ὄψεταί τις τὸ ὁρᾶν, καὶ χρῶμα ἕξει τὸ ὁρᾶν πρῶτον (“if someone is to see seeing, the primary seeing will also have color”). What makes the first reading preferable is the occurrence of τὸ ὁρῶν at III 2 425^{b}22, to which the second reading would make our text irrelevant.

Note 297

The being for them is not the same: See I 4 408^{a}25n.

Note 298

The activity of what can hear is hearing (*akoê*) **or an act of hearing** (*akousis*): The nouns *akoê* and *akousis* both mean “hearing.” To distinguish slightly between them the second is translated as “act of hearing.”

Note 299

Physicists (*phusiologoi*): The *phusiologoi* were thinkers who tried to give a general account of things that made no reference to incorporeal beings: “they posit the elements of bodies alone, but not of the incorporeal things, although incorporeal ones are also beings” (*Met.* I 8 988^{b}24–26).

Note 300

Voice: See II 8 420^{b}20n.
A sort of ratio (*logon tina*): See I 1 403^{a}25n.

Note 301

Each sort of excess destroys . . . the perceptual capacity: See II 11 424^{a}15n.

Note 302

That is also why things—for example, the sharp, sweet, or salty—are pleasant when, being pure and unmixed, they are brought into the ratio, since they are pleasant then: “Since every perceptual capacity is active in relation to its perceptible object, and completely so when it is in good condition in relation to the noblest of its perceptible objects (for a complete activity seems to be most of all something of this sort, but whether it is the perceptual capacity itself that is said to be active or the subject that perceptual capacity is in makes no difference), in the case of each perceptual capacity, the best activity will be, then, the activity of the subject that is in the best condition in relation to the most excellent of its objects. And this activity will be the most complete and most pleasant. For with every perceptual capacity there is a pleasure connected, and the same holds for both thought and contemplation. But the most pleasant is the most complete, and the most complete is the activity of a subject that is in good condition in relation to the most excellent of the relevant objects. And pleasure is what completes the activity” (*NE* X 4 1174^{b}14–23).

Note 303

For touch what can be [further] heated or cooled (*to thermanton ê psukton*) **is more pleasant:** Retaining ἁφῇ δὲ τὸ θερμαντὸν ἢ ψυκτόν, which OCT secludes. *To thermanton* is what can be heated, and so is not already too hot, or as hot as can be, and *to psukton*, similarly. The sense of the phrase, brought out by the addition of "further," is that what is in a mean between too hot and too cold is what is pleasant to touch.

Note 304

By what do we perceive that they are also distinct?: Reading τινι with some mss. for OCT and other mss. τινὶ. See III 7 431^{a}20–^{b}1.

Note 305

From this it is clear too that flesh is not the ultimate organ of perception, since then it would be necessary for what discerns things to discern them when it itself is touched: So flesh could not discern non-tangibles (colors, sounds), nor, therefore, the differences between them and the tangibles. This seems to be the obviously relevant point. That no perceptual organ perceives what is placed directly on it—which leads to the view that the flesh is not the organ of touch—is less obviously relevant (II 11 423^{b}17–26).

Note 306

One thing must state (*legein*) that they are distinct: *Legein* is presumably used instead of *aisthanesthai* ("perceive") because the discerners of sweet and white were personified in the previous sentence.

Note 307

The same thing, therefore, states this; so that, as it states, so too it understands and perceives: The personified thing states that sweet and white are distinct, and as it states this, so too it understands and perceives them as distinct.

Note 308

What discerns is both indivisible in number and inseparable [into parts], while the being for it is separated [into parts]: (1) The following text gives the account that is here being presupposed or laconically expressed in terms of *perceptual parts*: "If, then, as is in fact the case, the soul perceives sweet with one part and white with a different part, what is composed of these parts is either one thing, or it is not. But it must be one thing, since the perceptual part is one thing. What one thing, then, is its perception of? For nothing composed of those two [sweet, white] is one thing. There must, therefore, be one part belonging to the soul, with which any special perceptible is perceived . . . but each genus by means of a different one. Is it by being indivisible with respect to its activity, then, that the perceptual part, when its perception is of sweet and white, is one thing, but when it becomes divided in its activity, different ones? Or just as is possible with the things themselves, is it the case with the soul too? For numerically one and the same thing is white, sweet, and much more—even if its qualities are not separable from one another, the being for each of them is distinct. The same, then, should be posited in the case of the soul—the perceptible part is numerically one and the same [when its perception is] of any [special perceptible], but the being for it is distinct [when its perception is of distinct ones]—[when] of some things, distinct in genus, and [when] of others, distinct in species. So there can be simultaneous perception with a part that is one and the same, but not the same in account" (*Sens.* 7 449^{a}5–20). The following text gives the same account in terms of *perceptual capacities*: (2) "Since, though, each particular perceptual capacity has on the one hand something special and on the other something common (*koinon*)—for example, seeing is special to the capacity of sight, hearing to the capacity of hearing, and the same way for each of the others—there is also a *common capacity* that accompanies all of them by which someone also perceives that he is seeing and hearing. For it certainly is not by sight that he sees, and he certainly does not discern—and is not capable of discerning—that sweet things are distinct from white things either by taste or by sight or by both, but by one common part of all the perceptual organs. For there is one perceptual capacity, and the controlling perceptual organ is one, though the being for the perceptual capacity is distinct for each genus [of special perceptible]—for example, for sound and color. And this is present most of all together with the [perceptual organ of] touch. For this latter can exist separately from the other perceptual organs, whereas the others are inseparable from it (we have discussed these in our theoretical works on the soul). It is evident, therefore, that sleeping and waking are affections of this perceptual organ. That is why they belong to all animals. For touch alone belongs to all" (*Somn.* 2 455^{a}12–27).

Note 309

It is, then, in one way that what is divisible perceives divided things at the same time, but in another way it is this, insofar as it is indivisible, that does so, since the being for it is divisible, but in place and in number it is indivisible: "The primary perceptual organ is that in which the capacity to [take on the perceptible form without the matter] exists. It is the same [as the capacity], but the being [for it] is distinct. For what perceives must be a spatial magnitude, but surely neither the being for what can perceive nor the perceptual capacity is a spatial magnitude, but rather a sort of ratio and capacity of the former thing" (II 12 424^{a}24–28).

Note 310

Or is this not possible? Aristotle raises an objection to the account he has just proposed, which he answers at III 2 427^{a}9–14.

Note 311

If perceiving and understanding are like this: If, as is the case, they involve the taking on of the perceptible or intelligible form of the perceived or understood object without its matter.

Note 312

It is like what they call a point: in the way in which it is one or two, in this way it is [both indivisible] and divisible: "For the point both connects the length and limits it, since it is the starting-point of one [segment] and the endpoint of another" (*Ph.* IV 11 220^{a}10–11); "The 'now' is the connector of time . . .

since it connects past and future time; also, it is the boundary of time, since it is the starting-point of one [temporal segment] and the end-point of another. But this is not evident as it is in the case of the point, which is fixed. It divides potentially, and insofar as it is such the now is always different, but insofar as it is connecting it is always the same, just as in the case of mathematical lines. For a point is not always the same point in the understanding, since it is different in different cases when we divide the line, but insofar as it is one it is the same everywhere. So too the 'now' is on the one hand a potential division of time, on the other it is the boundary and union of both times. The division and the unification are the same thing, but the being for them is not the same" (II 13 222^a10–20).

Note 313

In the way in which divisibility belongs to it, it uses the same seal twice at the same time: The seal is the form that is imprinted on the perceptual capacity (II 12 424^a20).

Note 314

In the way, then, in which it uses the limit (*tô[i] perati*) **twice:** The limit referred to is the point at which the two uses of the seal are registered. Compare III 7 431^a17–^{b}1.

It discerns two separate things: Retaining κεχωρισμένα with Hamlyn.

Note 315

Empedocles: DK B106 = TEGP 164 F116, DK B108 = TEGP 166 F118. Aristotle quotes the same two passages in *Met.* IV 5 1009^b19–20.

Note 316

Homer's "Such is the mind (*noos*) **of men":** *Odyssey* XVIII.136.

Note 317

As we determined at the start of our account: I 2 404^b8–405^b10 (corporeality), 405^b13–19 (like known by like).

Note 318

As some say: For example, Democritus (I 2 404^a27–31).

Note 319

Both error and scientific knowledge seem to be the same with respect to contraries: Capacities are of two broadly different sorts, some non-rational, others involving reason. A mark of the ones that involve reason, such as crafts and sciences, is that they are "capacities for contraries alike," whereas a single non-rational capacity is "for a single thing": what is hot can only heat things, whereas medicine can both cure a disease and cause it (*Met.* IX 2 1046^b4–7; also *NE* V 1 1129^a11–17). Thus scientific knowledge or error is not one capacity with respect to one of a pair of contraries and a distinct capacity with respect to the other.

Note 320

All animals have a share of perception, but few of thinking (*phronein*): See I 2 404^{b}5n.

Note 321

Understanding (*noein*)**—in which there is a correctly and an incorrectly (for doing so correctly is wisdom** (*phronêsis*), **scientific knowledge** (*epistêmê*), **and true belief):** At *NE* VI 6 *nous* is included, along with *phronêsis* (there "practical wisdom"), scientific knowledge, and theoretical wisdom, among "the states by which we grasp the truth and never have false views about what cannot—or indeed can—be otherwise" (1141^{a}3–5), as it is indeed at *DA* III 3 428^{a}17–18. This would make it impossible for *noein* to be incorrect. Furthermore, because *nous* deals exclusively with scientific starting-points, it is not any sort of *phronêsis* or *epistêmê* (*NE* VI 6 1141^{a}7–8). It may be, therefore, that *noein* refers here not exclusively to an exercise of *nous*, as Aristotle understands *nous*, but also as other thinkers, such as Democritus, have understood it (*DA* I 2 404^{a}27–31). Notice "understanding (*nous*)—in the sense of wisdom (*phronêsis*)" at I 2 404^{b}5, and see also III 3 427^{b}3–4n.

Note 322

The perception of the special perceptibles is always true: See II 6 418^{a}15n.
And belongs to all animals: See I 2 403^{b}25–27.
Whereas it is possible to think things falsely: Think = *dianoeisthai*.
Thinking belongs to no animal that does not also have reason (*logos*): "Just as of eye, hand, foot, and of each part generally there seems to be some function, may we likewise also posit some function of a human being that is beyond all these? What, then, could this be? For living is evidently shared with plants as well, but we are looking for what is special. Hence we must set aside the living that consists in nourishment and growth. Next in order is some sort of perceptual living. But this too is evidently shared with horse and ox and every animal. There remains, then, some sort of practical living of the part that has reason (*logon*)" (*NE* II 13 1097^{b}30–1098^{a}4). See also *DA* II 3 415^{a}6–11.

Note 323

For imagination is distinct from both perception and thought: The move in Aristotle's mind is from perception, which all animals have, to imagination, which they also have (II 10 433^{b}7–11 434^{a}11).
Supposition (*hupolêpsis*): See III 3 427^{b}24–26n.

Note 324

Those who put things in a mnemonic system and make a mental image of it: "Just as in a mnemonic system, once the places are set up we remember the things themselves at once" (*Top.* VIII 14 163^{b}28–30; also *Mem.* 2 452^{a}12–16, *Somn.* 458^{b}20–24).
Believing is not up to us, since of necessity it is done falsely or truly: Belief aims at truth, and truth is not up to us: "It is not because we truly think you to

be pale that you are pale, but it is because of your being pale that we who say this grasp what is true" (*Met.* IX 7 1051^{b}6–9). Thus the idea is that we cannot both aim at truth in believing what we do and take ourselves to be free to believe at will.

Note 325

Our state is just like that of people looking at terrible or reassuring things in pictures: That is, we do not react by immediately feeling the corresponding emotions of fear or confidence.

Note 326

There are also different sorts of supposition itself, namely, scientific knowledge (*epistêmê*), **belief** (*doxa*), **wisdom** (*phronêsis*), **and the contraries of these, but the difference between these is for another account:** *NE* VI may be the account referred to, since it discusses *epistêmê* (VI 3) and *phronêsis* (VI 5), at any rate as Aristotle understands them, and indicates the differences between these and other states, including supposition—of which *epistêmê*, *nous*, and *phronêsis* are all identified as varieties (5 1140^{b}12–16, 6 1140^{b}31–32, 9 1142^{b}33)—and *doxa*.

Supposition (*hupolêpsis*): *Hupolêpsis* is like belief (*doxa*), but unlike scientific knowledge, in that it can be false as well as true (*NE* VI 3 1139^{b}15–18). But whereas *doxa* must be based on rational calculation (*Met.* IV 4 1008^{b}30–31), *hupolêpsis* need not be.

Belief (*doxa*): *Doxa* itself receives no focal discussion in *NE* VI 3. Nonetheless a portrait of it can be pieced together from what is said about it inter alia. Thus belief is "no less about things that are eternal and things that are impossible than about things that are up to us" (III 2 1111^{b}30–33), the latter being the perceptible particulars we can change through our voluntary actions. At the same time, belief presupposes rational calculation: "Perceptual imagination . . . also belongs to the other animals, but the deliberative sort exists [only] in the rationally calculative ones. . . . And this is the cause of these animals seeming not to have beliefs, namely, that they do not have the [imagination] that results from a deduction" (*DA* III 11 434^{a}5–11). Hence the part of the soul that forms beliefs (*doxastikon*) is the same as the part that calculates or deliberates (*NE* VI 5 1140^{b}25–26, 13 1144^{b}14–15). Unlike calculation and deliberation, however, which are types of inquiry, what one believes is "already determined," since belief is "not inquiry but already a sort of affirmation" (9 1142^{b}11–14). That is why believing is of necessity done either falsely or truly. For it is a form of affirmation, and "to say of what is that it is not, or of what is not that it is, is false, whereas to say of what is that it is, or of what is not that it is not, is true, and so he who says of anything that it is, or that it is not, will say either what is true or what is false" (*Met.* IV 7 1011^{b}26–28). It is also why believing is not up to us.

The contraries of these: At III 3 427^{b}10–11 Aristotle refers to the contraries of *phronêsis*, *epistêmê*, and *doxa alêthês* ("true belief"), as he here refers to those of *aisthêsis*, *doxa*, *epistêmê*, and *nous*. In the cases of *doxa alêthês* and *aisthêsis* (at any rate of things other than special perceptibles) this raises no problems. But Aristotle's general view of *phronêsis*, *epistêmê*, and *nous*, expressed in *NE* VI and elsewhere, seems to be that they have no incorrect versions—no contraries. As with *noein* (*DA* III 3 427^{b}8–9n), then, these notions may not yet be being understood in the more technical or regimented way that Aristotle himself advocates and soon adopts (428^{a}17–18), but in the looser one adopted by people generally.

Note 327

On the one hand imagination and on the other supposition seem to belong to understanding (*to noein*): At I 1 403^{a}8–9 understanding is characterized as "a sort of imagination," at III 10 433^{a}10 imagination as "a sort of understanding," and at III 8 432^{a}12–13, the objects of the two are related but distinguished. See also III 3 427^{b}8–9n.

Note 328

Is there some one capacity or state of these [appearances] with which we discern and grasp truth or falsity: Reading ἆρα μία τις ἔστι τούτων δύναμις ἢ ἕξις καθ’ ἣν κρίνομεν καὶ ἀληθεύομεν ἢ ψευδόμεθα with the mss. for OCT ἆρα μία τις ἔστι τούτων δύναμις ἢ ἕξις καθ’ ἃς κρίνομεν καὶ ἀληθεύομεν ἢ ψευδόμεθα ("is it one of those capacities or states in virtue of which we discern and grasp truth or falsity").

Note 329

Perception, belief, scientific knowledge, and understanding are of this sort: The claim is not that each of these states can equally grasp either truth or falsity, but that each of them either grasps truth alone, or both truth and falsity. This is made clear by III 3 427^{b}9–10, where scientific knowledge is identified with *correct* understanding, and by *NE* VI 3: "Let the states in which the soul grasps the truth by way of affirmation and denial be five in number: craft knowledge, scientific knowledge, practical wisdom, theoretical wisdom, and understanding. For supposition and belief admit of falsehood" (1139^{b}15–18).

Note 330

Things can appear to us when neither a perceptual capacity nor a perceptual activity is present—for example, the ones in dreams: To retain consistency with the next sentence ("perception is always present"), we should understand this to mean not that we can dream even if no perceptual capacity or activity is present in us, but rather that special perceptibles of a given sort (for example, colors and shapes) can be present in a dream even if we are not actively perceiving them or have lost the capacity to do so. Since this seems true of each perceptual capacity, imagination must be distinct from each, and so from all.

Note 331

If they were the same in activity: If imagination were a perceptual activity—or an activation of a perceptual capacity.

Ants and bees do, but grubs do not: Reading μύρμηκι ἢ μελίττῃ, σκώληκι δ' οὔ with Ross for OCT μύρμηκι ἢ μελίττῃ, καὶ σκώληκι δ' οὔ ("ants or bees, and grubs"). Aristotle attributes *phronêsis* to bees and ants (*PA* II 2 648^a5–8, 4 650^b18–27, *Met.* I 1 980^b22–25), which is something they could scarcely have without imagination.

But grubs do not: Grubs are incomplete animals, akin to eggs (*HA* I 5 489^b12–13, *GA* II 1 733^a1–2). Though they are here denied imagination, later they are accorded a vestigial form of it (*DA* III 11 433^b31–434^a5).

Note 332

Perceptions are always true: When they are of special objects. See II 6 418^a15n and III 3 428^b18–19.

Note 333

But rather when we do not perceive it clearly, and then our perceptions may be true or false: Reading τότε ἀληθὴς ἢ ψευδής with Hamlyn and the mss. for OCT πότερον ἀληθὴς ἢ ψευδής ("but rather when we do not perceive clearly whether it [the appearance] is true or false").

Note 334

Conviction (*pistis*) follows upon belief: For belief is consequent on rational calculation and is "a sort of affirmation" (*NE* VI 9 1142^b11–14) of its result (III 3 427^b20–21n). The degree of conviction need be no greater than the calculation legitimates.

None of the beasts has conviction: Aristotle sometimes allows *pistis* to follow on perception alone (*Ph.* VIII 8 262^a17–19), suggesting that animals could have it. But here, as the next sentence makes clear, it requires the possession of reason.

Note 335

Further, every case of belief implies (*akolouthei*) conviction, conviction implies being persuaded, and persuasion implies reason, and while some beasts have imagination, none has reason: Reading ἔτι πάσῃ μὲν δόξῃ ἀκολουθεῖ πίστις, πίστει δὲ τὸ πεπεῖσθαι, πειθοῖ δὲ λόγος· τῶν δὲ θηρίων ἐνίοις φαντασία μὲν ὑπάρχει, λόγος δ' οὔ, which OCT secludes. Compare: "Appetites that involve reason, on the other hand, are those where people have an appetite for something on the basis of being persuaded (for there are many things that people have an appetite to look at or acquire after hearing about them and being persuaded)" (*Rh.* I 10 1370^a25–27).

Note 336

Imagination will be neither belief together with perception, nor belief due to perception, nor a combination (*sumplokê*) of belief and perception: "We call appearing (*phainetai*) the blending (*summeixis*) of perception and belief" (Plato, *Sph.* 264b1–2).

It is clear that: Reading δῆλον ὅτι with Hamlyn and the mss. for OCT διότι.

Note 337

It follows [on the view we are considering], then, either that we have jettisoned the true belief that we had, or else, if we still have the belief, it will be necessary for the same one to be true and false: The sun appears to be a foot across. So, on the view under consideration, we believe that it is a foot across. At the same time, we are convinced (and so believe) that it is bigger than the inhabited world, and so is not a foot across. The same belief content, then, namely, that the sun is a foot across, is both true and false, which is impossible.

Note 338

Our belief that the sun is bigger than the inhabited world could have become false only if the object changed without our noticing: The previous sentence countenances two possibilities: (1) that we do not notice that the sun has changed size since we formed our belief; (2) that we have not in the meantime been convinced to change it. (2) is omitted because it could not have occurred without our noticing it, and so without our changing our belief.

Note 339

The things that coincide with the perceptibles: Reading ἃ συμβέβηκε τοῖς αἰσθητοῖς here not at III 3 428^{b}24 with OCT.

Note 340

The common perceptibles, that is, ones that follow along with (*hepomenôn*) **the coincidental perceptibles to which the special ones belong:** For example, the pale is a special perceptible of sight. Because it belongs to Socrates, he is coincidentally visible. The magnitude and movement that also belong to him are common perceptibles—in fact, basic ones (III 1 425^{a}14–17).

Note 341

And about these [common perceptibles] now it is most of all possible to be in error in accord with perception: Aristotle does not elaborate on why this is so. But the overall context makes the rationale fairly clear. The focus of the discussion is the imagination, and the deception at issue is the sort made possible, first, because imagination-based appearances can have the very same content as—or be like—the perceptions that cause them (III 3 428^{b}14). Second, because the perceptual part of the soul can operate in the absence of, or in isolation from, the understanding (429^{a}1–8, 8 432^{a}9–10, 10 433^{a}9–10). The resulting deception is, therefore, of two sorts, one occurring when the perceptible object is present to the senses, the other when it is absent (3 428^{b}27–29). When the perceptible object is a proper perceptible, no deception of the first sort is possible: only an appearance of pale sufficiently resembles a perception of pale to lead the perceptual part to take it for such an appearance. Hence deception is possible only about the presence of the object to sight, not about its identity. In the case of coincidental perceptibles and common perceptibles, both types of deception are possible, but there are important differences between them. Even when the pale thing that is being perceived is the son of Cleon, neither the resulting perception nor the longer-lasting appearance may be precise enough to distinguish him from many other people. Still, when the perception or appearance *is* sufficiently detailed and precise it can, like an accurate portrait, provide a reliable basis for identification—although not, of course, when the object is "far away" (428^b29). In the case of common perceptibles, by contrast, even a very detailed and precise perception or appearance will not provide a reliable basis for discerning between sizes, shapes, numbers, and speeds, if they differ from one another in ways that the senses alone, in isolation from understanding and the rational part of the soul, cannot detect. The point goes back to Plato: "The same object, viewed from nearby, does not appear the same size, I presume, as when viewed from a distance. . . . And the same things appear bent and straight when seen in water or out of it, or concave and convex because sight is misled by colors, and every other similar sort of confusion is clearly present in our soul. . . . And haven't measuring, counting, and weighing proved to be most welcome assistants in these cases, ensuring that what appears bigger or smaller or more numerous or heavier does not rule within us, but rather what has calculated or measured or even weighed? . . . And that is the task of the soul's rational constituent? . . . [And it] believes in accord with the measurements" (*Rep.* X 602d–603e). Aristotle's thought is presumably similar. Perception's failure to control truth where common perceptibles are concerned is its failure to do so when operating in isolation from the understanding, and the measuring instruments, calculating devices, and various sorts of scientific theories that cannot exist without it.

Note 342
Imagination will be a movement that comes about as a result of the activity of perception: "Imagination comes about either because of understanding or because of perception" (*MA* 8 702^a19). This is because our understanding employs imagination-based appearances derived from perception (*DA* III 8 432^a12–13).

Note 343
Sight is sense perception to the highest degree (*malista*): In describing sight in this way Aristotle probably has in mind the fact that "the different qualities that the capacity of sight reports are many and multifarious because all bodies are colored, so that it is to the highest degree (*malista*) by this perceptual capacity that the common perceptible objects are perceived" (*Sens.* 1 437^a6–8).

Note 344
Their understanding is sometimes obscured by feeling, disease, or sleep (for example, human beings): See III 4 430^a5–6n.

Note 345
Whether this is separable or not separable as a spatial magnitude but only in account: See I 1 403^a10–15n, also II 2 413^b13–27.

Note 346
It must be unaffectable, therefore, but receptive of the form: See II 5 417^b2–16 and, on "unaffectable," I 2 405^b20n.

Note 347

The understanding must, therefore, since it understands all things, be unmixed: See III 4 429^{b}29–430^{a}9n.

As Anaxagoras says: “The other things share in a portion of everything, but the understanding is unlimited and self-controlling and has not been mixed with anything, but exists alone itself by itself. For if it were not by itself but had been mixed with something else . . . , the things mixed together with it would be preventing it, so that it would not control anything in the same way as it actually does being alone by itself. For it is finest of all things and purest; and moreover it has all knowledge (*gnômên*) of everything, and the greatest strength” (DK B12 = TEGP 31 F15).

Note 348

Those who say, then, that the soul is a place of forms (*topon eidôn*) **speak well:** In Plato, *Prm.* 132b3–5, Socrates proposes the view that “maybe each of these Forms is an intelligible object (*noêma*) and properly occurs only in souls.” But the phrase *topos eidôn* does not occur in Plato.

Note 349

When the understanding understands something intensely intelligible, it [afterwards] understands inferior ones (*hupodeestera*) **not less, but even more:** A perceptible triangle, made of bronze or wood, is inferior in intelligibility to an abstract one, since the latter has perfectly straight sides that meet at precise angles, and so exactly fits the definition of a triangle, and the theorems of geometry that employ it, whereas the former does not. Once we understand the abstract triangle and the theorems that hold true of it, however, we are better able to understand the material one. For example, we can use mathematical theorems to determine its area—although within a margin of error.

Note 350

And then it is capable of understanding through itself (*di’ hautou*): Reading (1) καὶ αὐτὸς δι’ αὑτοῦ τότε δύναται νοεῖν with OCT. The mss. have (2) καὶ αὐτὸς δὲ αὑτὸν τότε δύναται νοεῖν (“and then it is capable of understanding itself”). (1) is supported by δι’ αὑτοῦ at III 4 429^{b}7.

Note 351

In some cases the being for X and X are the same: “The essence [of a thing] and the thing [itself] are in some cases the same—for example, in the case of the primary substances, such as curvature and being for curvature, if this is a primary substance. By a primary substance I mean what is not said to be by being one thing in another, that is, in an underlying subject as matter. But things that are [said to be] as matter or as combinations with matter are not the same [as their essence], nor are those that are one coincidentally” (*Met.* VII 11 1037^{a}33–^{b}6). The things referred to as primary substances in this passage, since they are not said of an underlying subject as matter, are obviously not the formal elements of particular matter-form compounds, such as Socrates. Instead they are, so to speak, *pure or* *matterless forms*. The very mark of substancehood, however, is particularity and the separability (*DA* I 1 403^{a}12n) that goes along with it: "If we do not posit substances to be separate, and in the way in which particular things are said to be separate, we will do away with the sort of substance we wish to maintain" (*Met.* XIII 10 1086^{b}16–19). But in matter-form compounds, matter seems to be the particularizing element and form a sort of universal, shared in common by many distinct particulars: "And once we have the whole, such-and-such sort of form in this flesh and bones, this is Callias or Socrates. And they are distinct because of their matter (for that is distinct), but the same in form (for the form is indivisible)" (VII 8 1034^{a}5–8). What resolves the resulting puzzle, which Aristotle acknowledges to be among the most difficult, is the identity of pure or matterless forms with the understanding of them: "The fact that all scientific knowledge is universal, so that the starting-points of the beings must also be universal and not separate substances, involves the greatest puzzle of those mentioned. But though there is surely a way in which what is said is true, there is another way in which it is not true. For scientific knowledge, like knowing scientifically, is twofold, one potential, the other active. The capacity [or potentiality], being as matter universal and indefinite, is of what is universal and indefinite, whereas the activity, being determinate, is of what is determinate—being a this something it is of a this something. But it is only coincidentally that sight sees universal color, because this [particular instance of] color that it sees is *a* color, and so what the grammarian theoretically grasps, namely, this [particular instance of] A, is *an* A. For if the starting-points must be universal, what comes from them must also be universal, as in the case of demonstrations. And if this is so, there will be nothing separable and no substance either. However, in one way scientific knowledge is universal, but in another it is not" (XIII 10 1087^{a}10–25). As actively understood, then, a pure form is a particular, and so, in this respect at least, there is no obstacle to its being a substance. Pure forms, as we will be told in a few lines, are the starting-points of the strictly theoretical sciences (*DA* III 4 430^{a}4–5).

Note 352

Flesh does not exist without matter, but is like the snub: "The substance is the form present in the thing, from which together with the matter the compound substance is said to be composed—for example, the concavity. For from this and the nose [= flesh] both snub nose and the snubness are composed" (*Met.* VII 11 1037^{a}29–31).

Like the snub, flesh is a *this in this*: "There is nose and concavity, and snubness, which is said [of things] composed of both, as *a this in this*" (*Met.* VII 5 1030^{b}17–18); "Some things presumably are *this in this*, or these things in this state" (11 1036^{b}23–24). Thus the snub is this form (concavity) in this matter (nose, flesh), or this nose flesh arranged concavely. But when "the snub" is a generic noun phrase (I 1 402^{a}8n), referring to a universal, we must add, "both taken universally": "The human and the horse, though, and things that are in this way set over the particulars, that is, [taken] universally, are not substance but rather a compound of a sort, [consisting] of this account and this matter taken universally" (*Met.* VII 10

1035^{b}27–30). Thus snubness, as we would call it, is this form (or account or ratio) in this matter (nose, flesh), both taken universally.

Note 353
The way the state of a bent line is in relation to itself when straightened out: The perceptual part is the line. It is in one state—namely, bent—when it perceives perceptible objects, and in another—straight—when (on the supposition that the understanding is the perceptual part in a certain state) it understands intelligible ones. Perhaps the analogy is intended to convey no more information than that. But since "a straight line is more one than a bent line" (*Met.* V 6 1016^{a}12–13), it may be that the line's straightness is supposed to be significant, and to help us grasp what sort of state of the perceptual part might enable it to take on a unified intelligible form without the matter (as at *DA* I 1 403^{a}10–15).

Note 354
But its essence, if the being for straight is distinct from the straight, is something else—let it be, two: "They [probably the Pythagoreans] lead everything back to numbers, and say that the account of line is that of [the number] two" (*Met.* VII 11 1036^{b}12–13). In Aristotle's view they do so because they mistake the form of the line—which is the number two or twoness, since a line is a two-dimensional geometrical object, or determined by two points—for the line itself, which is a matter-form compound: "But we should not be ignorant of the fact that sometimes it escapes notice whether the name [for example, 'the line'] signifies the composite substance or the activation and the shape [= the form]—for example, whether the house is a sign for the common thing, because it is a covering composed of bricks and stones placed this way, or for the activation and the form, because it is a covering, or whether a line is a two [form] in length [matter] or a two, or whether an animal is a soul in a body or a soul (for a soul is substance and activation of a certain sort of body)" (VIII 3 1043^{a}29–36).

Note 355
In general, therefore, the way the things are separable from matter is the way it is too with what concerns the understanding: In other words, how separable an intelligible object (essence, form) is from matter determines how separable the understanding of it is from the perceptual part and the body.

Note 356
Either everything else will have understanding, if it is not by reference to something else that it itself is intelligible, and if the intelligible is something that is one in form: Suppose: (1) The understanding U is an intelligible object by virtue of U itself—that is, U is not an intelligible object "by reference to something else." (2) Everything intelligible is the same in form—this being the form F in virtue of which they are all intelligible. (3) Then F = U, so that U must be present in every intelligible object.
Or it will have something mixed with it that makes it intelligible in just the way other things are: (1) U is an intelligible object in virtue of F. (2) F ≠ U. (3)

U will not be "unmixed," and so will not be able to take on or understand all forms (III 4 429^{a}18).

Note 357
Being affected in virtue of something common has been determined before: At II 5 417^{b}2–7.

Note 358
The understanding is an intelligible object in just the way its intelligible objects are, since, in the case of those things that have no matter, what understands and what is understood are the same, since theoretical scientific knowledge and what is known in that way are the same: Understanding is similar in structure to perceiving, so that when it is actively understanding the understanding "must be unaffectable . . . , but receptive of the form, and potentially such as it is, although not the same as it, and as what is capable of perceiving is in relation to the perceptible objects, so the understanding must be in relation to the intelligible ones" (III 4 429^{a}13–18). The element in the understanding that receives the intelligible form is like the eye-jelly. For, as in the case of seeing, what this element takes on is the form of the intelligible object without its matter (430^{a}7–8). This element is "passive understanding (*pathêtikos nous*)" (5 430^{a}24–25). It "serves as matter for each kind of thing," and is "what is potentially each of them." In addition, "there is also something else that is understanding's cause and that is productive, in that it produces it—the two being related as, for example, a craft to its matter [or materials]" (430^{a}10–13). This second element is productive (or active) understanding (*nous poiêtikos*).

If (passive) understanding is simple and unmixed, however, without any determinate nature of its own, how can it be an intelligible object (III 4 429^{b}26)? This problem is analogous to the following one about seeing—how can a perfectly transparent object be visible?—and receives an analogous solution: just as the latter is visible "because of the color of something else" (II 7 418^{b}4–6), so the understanding becomes an intelligible object through taking on the intelligible form of something else: "The understanding actively understands itself by partaking of the intelligible object. For it becomes an intelligible object by touching and understanding one, so that understanding and intelligible object are the same. For what is receptive of the intelligible object and the substance is the understanding, and it is active when it possesses it" (*Met.* XII 7 1072^{b}20–23).

But if what the understanding takes on is the intelligible form of something *else*, how can understanding it amount to *self*-understanding? In general, it cannot. But in some cases, productive understanding is identical to the intelligible object it is grasping (*DA* III 4 430^{a}2–3). For in the case of the strictly theoretical sciences the theoretical scientific knowledge of an intelligible object or form F is identical to F itself (430^{a}4–5): "The being for an act of understanding is not the same as the being for a thing understood. Or is it that in some cases the scientific knowledge *is* the thing? In the case of the productive sciences isn't it the substance and the essence without the matter? In the case of the theoretical sciences isn't the account the thing and its active understanding? In the cases, then, where the thing understood and the active understanding of it are not distinct, namely, in those where the thing understood has no matter, they will be the same, and the active understanding will be one with the thing understood" (*Met.* XII 9 1074^{b}38–1075^{a}5). This entails that the class of intelligible objects referred to in *DA* III 4 430^{a}2–3 consists more particularly of those things that are *not*, like the snub, a *this in this*—or this form in this matter taken universally—but what we called *pure forms* (429^{b}13–15n).

To see why this holds we should look at a case of an intelligible object F that is like the snub, so that its structure is this form G in this matter m, and see why it and the understanding of it are not the same. When a person X has learned what F is, but is not now actively thinking about F, F is a potentiality present in X's passive understanding, which he is capable of activating by himself (III 4 429^{b}7–9). Since X can activate F on numerous occasions, F is a universal—something that is one and the same on many different occasions. As present in X's passive understanding, then, F is this form G in this matter m, both taken universally. When activated or actualized in X's productive understanding, however, F is an intelligible particular F*: "Scientific knowledge, like knowing scientifically, is twofold, one potential, the other active. The capacity [or potentiality], being as matter, universal and indefinite, is of what is universal and indefinite, whereas the activity, being determinate, is of what is determinate—being a this something it is of a this something" (*Met.* XIII 10 1087^{a}15–18). But because F is this form G in this matter m, both taken universally, F* must be this form G in this particular bit of perceptible matter m. F* is thus a particular matter-form compound—a particular snub nose, for example. As such it obviously cannot be present in X's understanding, and his active understanding of F cannot be identical to F*. It follows, then, as (3) claims that it is only when an intelligible object does not have a structure like snub that the active understanding of it is identical to it.

Note 359

The cause of the understanding's not always [actively] understanding must be investigated later: The understanding that is not always actively understanding must be passive understanding, since active understanding is not "sometimes understanding and at other times not" (III 5 430^{a}22). Although no discussion, advertised as such, of what causes its inactivity is to be found in Aristotle's extant works, his discussion of how sleep affects the understanding seems at least relevant to it: "Just as when someone changes from drunkenness, sleep, or disease to the contrary states we do not say that he has *come to have* scientific knowledge again, even though he was incapable of using his knowledge [while drunk, asleep, or diseased], so likewise when he acquires the state at the start we should not say either [that he is *coming to have* scientific knowledge]. For it is due to the soul's stopping its natural restlessness that something becomes wisdom or scientific knowledge . . . and it settles down and comes to rest with regard to some things due to nature itself, and with regard to others due to other causes, but in either case accompanied by the alteration of certain things in the body, just as in the case of the use and activity [of the understanding part] when someone becomes sober or wakes up"

(*Ph.* VII 3 247^b13–248^a6). The following passage explains what in the body gets altered and what causes this: “Sleep is not every incapacity of the perceptual faculty, but rather this affection arises from the evaporation that attends eating food. For what is vaporized must be driven on to a given point and then must turn back and change just like the tide in a narrow strait. In every animal the hot naturally rises, but when it has reached the upper parts, it turns back, and moves downward in a mass. That is why sleepiness mostly occurs after eating food, for then a large watery and earthy mass is carried upward. When this comes to a stop, therefore, it weighs a person down and makes him nod off; but when it has actually sunk downward, and by its return has driven back the hot, then sleepiness comes on and the animal falls asleep” (*Somn.* 3 456^b17–28). So when there is too much vaporized food present in us it makes us incapable of accessing the intelligible objects in our passive understanding. That is why an understanding that is “understanding nothing . . . would be just like someone asleep” (*Met.* XII 9 1074^b17–18). If our understanding can only be active when it is actively understanding such an object (as *DA* III 5 430^a25 seems to say) we can now see why it is not always actively understanding anything.

Note 360

In those that have matter each of the intelligible objects is present potentially: Again, take snubness as an example. It is this form F in this matter m, both taken universally (III 4 430^a2–5). F, as a form, is potentially an intelligible object because it could be actively contemplated or understood. But because it is not identical to the understanding of it, it need not be actively contemplated or understood in order to exist: it can exist in Socrates’ nose even though no one is contemplating it.

Note 361

So in these understanding will not be present (for the understanding is a capacity to be such things without the matter), but what is intelligible will be present in *it*: Snubness is this form F in this matter, both taken universally. F is intelligible in that it is a potential object of understanding, not an actual one. So the presence of F in snubness and the like does not entail the presence in it of understanding. When F is being understood, however, it is present in the understanding.

Note 362

Since in the whole of nature there is something that is matter for each genus (and this is what is potentially all those things [that are in the genus]), while there is something else that is causal and productive, because of producing them all (which, for example, is the role of a craft in relation to its matter): “So far as things formed by nature or by human craft are concerned, the formation of what is potentially is brought about by that which is actually” (*GA* II 1 734^a29–31); “The male provides both the form and the source of movement while the female provides the body, that is, the matter” (I 20 729^a9–11); “Nothing comes away from the carpenter to the matter of the timbers, nor is there any part of the craft of carpentry in the product, but the shape and the form are produced from the carpenter through the movement in the matter. And his soul in which the form is and his scientific knowledge move his hands or some other part in a movement of a particular sort, different when the product is different, the same when it is the same, and the hands move the instruments and the instruments move the matter. Similarly, the male's nature, in those that emit seed, uses the seed as an instrument containing actual movements, just as in craft productions the instruments are in movement; for the movement of the craft is in a way in them" (I 22 730^{b}11–23); "Seed is a residue from that nourishment which is a form of blood—that which is finally distributed to the parts [of the body]. This is why it has a great capacity . . . and why it is reasonable that offspring should resemble their parents. For that which goes to all the parts [namely, the blood] resembles that which is left over [the seed]. Hence the seed of the hand or of the face or of the whole animal is in an undifferentiated way a hand, or a face, or a whole animal, that is, what each of the latter is actually, such seed is potentially" (I 9 726^{b}10–18).

Which, for example, is the role of a craft in relation to its matter: "Since what comes to be, comes to be as a result of something (by which I mean the starting-point that the coming to be is from) and from something . . . and comes to be something (and this is either a sphere or a circle or whichever of the others it happens to be), just as the producer does not make the underlying subject (the bronze), so he does not make the sphere either, except coincidentally, because the brazen sphere is a sphere and he does make the former. For to make the this something is to make from what is wholly the underlying subject a this something. I mean that to make the bronze round is not to make the round or the bronze but a distinct thing, namely, this form in something else. For if the producer makes something, he must make it from something else (for we assumed this). For example, he makes a brazen sphere, but in such a way that from this, which is bronze, he makes this, which is a sphere. If, then, he also made this [matter] itself, it is clear that he will make it in the same way, and the productions will go on without limit. It is evident, therefore, that neither does the form itself—or whatever we ought to call the shape that is in the perceptible thing—come to be, nor is there any coming to be of it, or of the essence (for it is this that comes to be in something else, whether as a result of craft or as a result of nature or of some capacity). But the producer does make a brazen sphere to be. For he produces it from bronze and sphere. For in this he produces the form, and the result is a brazen sphere" (*Met.* VII 8 1034^{a}9–^{b}10).

So in the soul too there must be these differences (*diaphora*): When, through perception or learning or whatever, intelligible forms become imprinted on X's passive understanding, X can activate them by himself (III 4 429^{b}5–9). There must therefore be something "causal and productive" in his soul that enables him to do so. This is so-called productive understanding.

Note 363

And in fact there is one sort of understanding that is such by becoming all things, while there is another that is such by producing all things in the way

that a sort of state, like light, does, since in a way light too makes potential colors into active colors: A transparent medium stands to color as the passive understanding does to intelligible objects: as the one must be colorless to be able to take on the form of any color without the matter, so the other must be unmixed to be able to take on every intelligible form without the matter—if there is any (III 4 430^{a}1–5n). Light is the activity of such a medium: "the activity . . . of the transparent insofar as it is transparent" (II 7 418^{b}9–10). Hence things that are potentially colored become actively so when a phosphorescent or self-illuminated light source activates it. Similarly, we may infer, the productive understanding, as in substance or essence an actively self-intelligible object (III 5 430^{a}18), makes what is potentially intelligible (namely, an intelligible object already received by passive understanding) into something actively intelligible.

Note 364

And this [productive] understanding is separable, unaffectable, and unmixed, being in substance an activity (for the producer is always more estimable than the thing affected and the starting-point than the matter), not sometimes understanding and at other times not: Omitting τὸ δ'αὐτό ἐστιν ἡ κατ' ἐνέργειαν ἐπιστήμη τῷ πράγματι· ἡ δὲ κατὰ δύναμιν χρόνῳ προτέρα ἐν τῷ ἑνί, ὅλως δὲ οὐδὲ χρόνῳ ("active scientific knowledge, however, is the same as its object, whereas potential scientific knowledge is prior in the individual, but in general it is not even prior in time"), which recurs at III 7 431^{a}1–3, and is out of place here, and punctuating: καὶ οὗτος ὁ νοῦς χωριστὸς καὶ ἀπαθὴς καὶ ἀμιγής, τῇ οὐσίᾳ ὢν ἐνέργεια (ἀεὶ γὰρ τιμιώτερον τὸ ποιοῦν τοῦ πάσχοντος καὶ ἡ ἀρχὴ τῆς ὕλης), [ἀλλ'] οὐχ ὁτὲ μὲν νοεῖ ὁτὲ δ' οὐ νοεῖ). The final clause—from which ἀλλ' should perhaps be omitted with some mss.—should be taken as explanatory of τῇ οὐσίᾳ ὢν ἐνέργεια ("being in substance and activity").

[Productive] understanding is separable, unaffectable, and unmixed, being in substance an activity: The implicit inference is from being in substance (essence) an activity to being unmixed, impassive, and separable. What the productive understanding is separable from and unmixed with is matter (passive understanding): "The primary essence [= the divine understanding with which the primary god is identical] does not have matter, since it is an actuality [= activity]" (*Met.* XII 8 1074^{a}35). But matter in the final analysis is potentiality and form (= substance, essence) is actuality: "We must not look for a definition of everything, but be able to comprehend the analogy, namely, that as what is building is in relation to what is capable of building, and what is awake is in relation to what is asleep, and what is seeing is in relation to what has its eyes closed but has sight, and what has been shaped out of the matter is in relation to the matter, and what has been finished off is to the unfinished. Of the difference exemplified in this analogy let the activity be marked off by the first part, the potentiality by the second" (IX 6 1048^{a}36–^{b}6). Thus what is in substance or essence an activity cannot involve any matter, since as pure actuality it cannot involve any potentiality.

Separable: See I 1 403^{a}11n.

Unaffectable: Affectable things are subject to change; "all things that change have matter" (*Met.* XII 2 1069^{b}24–25); the understanding does not have matter; therefore, the understanding is "impassive and unalterable" (7 1073^{a}11).
Being in substance an activity: (1) Consider, first, the case of the divine understanding, which is identical to the primary god and unmoved mover: "Issues concerning the [divine] understanding involve certain puzzles. For while it seems to be the most divine of the appearances [= the celestial phenomena (*Met.* XII 8 1074^{a}1)], but the question of how it can have that status involves certain difficulties. For if on the one hand it understands nothing, where is its dignity? It would be just like someone asleep. And if on the other hand it does understand something, this other thing controls it (since what it is, its substance, is not active understanding, but a capacity), and it would not be the best substance. For it is because of actively understanding that the esteem belongs to it. Further, whether it is understanding [as a capacity] or active understanding that is the substance of it, what does it understand? For it is either itself or something else. And if something else, then either always the same thing or sometimes this and sometimes that. Does it, then, make a difference or none at all whether it actively understands the noble or some random object? Or would it not be absurd for it to be thinking of some things? It is clear, therefore, that it actively understands what is most divine and most estimable and does not change [its object], since change would be for the worse, and would at the same time be a sort of movement. First, then, if it is not active understanding that is its substance but a capacity, it is reasonable to suppose that the continuity of its active understanding is laborious to it. Next, it is clear that something else would be more estimable than the understanding, namely, what is understood by it. And indeed [the capacity] to understand and active understanding will belong even to someone who actively understands the worst thing, so that if this is to be avoided (for there are even some things that it is better not to see than to see), the active understanding would not be the best thing. It is itself, therefore, that it understands, if indeed it is the most excellent thing, and it is the active understanding that is an active understanding of active understanding" (XII 9 1074^{b}15–35). The reference to esteem in the next sentence (*DA* III 5 430^{a}17–18), to the understanding's not "sometimes understanding and at other times not" in what perhaps should be the following one (430^{a}20–21), and to its immortality and eternality in the one after that (430^{a}23), suggests that Aristotle is thinking of the understanding as it is present in human beings in a parallel way. The fact that the understanding is "the most divine element in us" (*NE* X 7 1177^{a}16) and does not pass away (*DA* I 4 408^{b}18–25) no doubt solidifies the suggestion.

Just how we should cash out the parallel is somewhat less clear. The following text, though, is at least suggestive of an answer: "Just as in the whole [= the universe] it is the [primary] god, so it is too in us. For the divine constituent in us [= understanding or reason] in a way does all the moving. Of reason, however, the starting-point is not reason, but something superior. But what besides the [primary] god is superior to both scientific knowledge and understanding, since virtue [of character] is an instrument of understanding?" (*EE* VIII 2 1248^{a}25–29). Apparently, then, the parallel is this: as the divine understanding has itself as its intelligible object, so our understanding has the divine understanding as its intelligible object. God is self-activating, whereas we are, as it were, god-activated. That seems to imply, though, that our understanding is in essence an activity by always actively contemplating god, and that seems preposterous—and for two reasons. (3a) When we are actively contemplating something it does not seem to us that it is always the primary god that we are contemplating. (3b) Contemplating seems to be in some sense of the term a self-conscious activity (*DA* III 4 430^{a}4–5), yet we are not conscious of always contemplating anything. Indeed, we believe that there are times when we are not contemplating anything, for example, when we are asleep or unconscious (compare 430^{a}5–6).

(4) The view that (4a) some intelligible objects O_{1-n} (those that, unlike the snub, involve no matter) are identical to the understanding of them, so that $U(O_1) = O_1$, $U(O_2) = O_2$, and so on, and that (4b) understanding in contemplating one of those thus becomes an intelligible object U_o for itself, seem to offer some help at any rate with (3b). For they imply that whenever we are contemplating one of O_{1-n} we are contemplating U_o. But the primary god is "an active understanding of active understanding," which is just what U_o seems to be. We can to some extent grasp, then, why Aristotle might think that in contemplating any one of O_{1-n} we are at the same time contemplating his primary god. When the object being contemplated is not one of O_{1-n}, but is, like the snub, one of S_{1-n}, we know that $U(S_1) \neq S_1$, and so on for the others. Nonetheless, the formal elements in such objects (the formal elements minus the matter) do seem to be like O_{1-n}, and to be subject to the same considerations.

For (*gar*) the producer is always more estimable than the thing affected, and the starting-point than the matter: "That the activity is also better and more estimable than the excellent capacity is clear from the following considerations. For in the case of those things that are said to be with reference to being capable, the same one is capable of contraries—for example, the same thing that is said to be capable of being healthy is also capable of being sick, and at the same time. . . . For the contraries to be present at the same time, however, is impossible (for example, to be healthy and to be sick), so that it is necessary for the good to be one or the other of them. But being capable is of both alike, or of neither. So the activity is better" (*Met.* IX 9 1051^{a}4–15). The relevant producer here is the productive understanding and the matter is the passive understanding and the various forms stamped on it that productive understanding, by being in essence an activity, activates (*DA* III 5 430^{a}10–17).

More estimable: See I 2 404^{b}5n.

For (*gar*): The explanatory force of this sentence—registered by *gar*—is not entirely clear, but is presumably to be brought out like this: "Since the producer is more estimable than the matter, we can see why the active understanding has the attributes—being separable, impassive, unmixed, and in substance an activity—that belong to the most estimable being, namely, the primary god."

Note 365

When separated, this alone is just what it is (*touth' hoper esti*): "Things that signify substances signify—about what they are predicated of—just what that thing is or just what sort it is. Things that do not signify substances but are said of some other underlying subject, which is neither just what that thing is nor just what sort it is, are coincidents—for example, to say of the human [that it is] the pale. For the human is neither just [what] pale [is] (*hoper leukon*) nor just [what] sort pale [is], but instead, presumably, animal, since animal is just what human is. Things that do not signify substances must be predicated of some underlying subject, and there cannot be anything pale that is not pale in virtue of being some other thing" (*APo.* I 22 83^{a}24–32). Thus to say that A is *hoper* B (as the productive understanding when separated is here said to be *hoper* an activity) is to say that A is just B. See *Top.* III 1 116^{a}23–28, IV 2 122^{b}18–20. So the claim is that when the productive understanding is separated from the passive understanding it is just an activity pure and simple, and has no material or passive element.

Note 366

It alone is immortal and eternal (but we do not remember because this is unaffectable): Memory, like understanding, has a lot in common with perception: "A problem might be raised as to how, when the affection is present but the thing producing it is absent, what is not present is ever remembered. For it is clear that one must understand the affection, which is produced by means of perception in the soul, and in that part of the body in which it is, as being like a sort of picture, the having of which we say is memory. For the movement that occurs stamps a sort of imprint, as it were, of the perceptible object, as people do who seal things with a signet ring. That is also why memory does not occur in those who are subject to a lot of change, because of some affection or because of their age, just as if the change and the seal were falling on running water. In others, because of wearing down, as in the old parts of buildings, and because of the hardness of what receives the affection, the imprint is not produced" (*Mem.* 1 450^{a}25–^{b}5). Thus *memory wax*, as we may call it, is stamped with a perceptible form, but not the matter, and as a result, provided the memory wax is up to the task of retaining what is imprinted on it, the soul acquires the capacity to remember the thing causally responsible for the stamping. If we are to remember at time t_2 anything that occurred at time t_1, then, we must have had memory wax at t_1 and at t_2. Hence if the understanding were actively understanding some intelligible object at a time when it was separated from memory wax, and was unaffectable by the movements that stamp things on it, as it would be if it were separated from passive understanding and the body, we would not remember this: "Even the memory of intelligible objects does not occur without an appearance. So memory will belong coincidentally to the understanding, but intrinsically to the primary perceptual part" (*Mem.* 1 450^{a}12–14). Thus the eternal existence of our active understanding in separation from memory wax and other concomitants of embodiment is consistent with our inability to remember anything of that existence. This disposes of one objection to our accepting that it existed then.

Whereas the passive understanding is capable of passing away: Since it, like memory wax, requires a body (I 4 408^b25–29).

And [1] without this (*toutou*) **it understands nothing** (*outhen noei*): [1] could mean: [1a] without passive understanding, productive understanding understands nothing; or [1b] without productive understanding passive understanding understands nothing. Initially, [1a] seems to conflict with the fact that active understanding, as in essence an activity, can be actively understanding—and so understanding some intelligible object—when separated from memory wax, mortal passive understanding, and the body, making [1b] seem the more attractive option, since it has already been stated at the opening of the chapter (III 5 430^a10–17). Nonetheless, if [1a] refers to a productive understanding that is not separated from a passive one, it too seems to state something that Aristotle believes, namely, when if we, as matter-form compounds, understand anything, "we must at the same time understand an appearance" deriving from perception and memory (8 432^a8–9). [1b], however, seems to fit better with the rest of the chapter.

Note 367

The understanding of indivisible things (*adiairetôn*) **is found in those cases concerning which there is no falsehood:** "Where the incomposite (*asuntheta*) items are concerned, then, what is being or not being and what is truth and falsehood? For they are not composite, so that they would be if combined and not be if divided, like the pale and the log or the incommensurable and the diagonal, nor will truth and falsehood still hold in the same way in their case. Or, rather, just as truth is not the same in their case, neither is being. Instead, truth or falsity consists in this—to touch and to announce is true (for affirmation and annunciation are not the same), but to be ignorant is not to touch, since it is not possible to be in error about the what-it-is, except coincidentally. The same holds, too, with regard to incomposite substances, for it is not possible to be in error about them. And they are all active, not potential. For otherwise they would have come to be and passed away. But as things stand being does not itself come to be or pass away, since if it did, it would have to come to be from something. Thus, with regard to those things that are just what something is and activities, it is not possible to be in error, but either to understand or not understand, but where they are concerned, their what-it-is *is* inquired into, whether it is such-and-such or not. With being as truth and not being as falsehood, by contrast, one sort, if it is in fact combined, is true, while if it is not combined, it is false, the other sort is if indeed it is a being in this way, while if it is not [a being] in this way, it is not. But truth is understanding these things, whereas falsehood does not exist and neither does any error, but ignorance does exist, though it is not like blindness, since blindness would be like wholly lacking the part that understands. It is evident too that about the immovable things there can be no mistake as regards time, if we take them to be immovable. For example, if we think that the triangle does not change, then we will not think that at one time it has two right angles but that at another time it does not (for in the case it would change). But [we can think] that one sort is and another sort is not, for example, [we can think] that no even numbers are prime, or that some are and some are not. But

about a single thing that is one in number not even this [sort of mistake can occur]. For we will no longer think that one thing is an another is not, but will grasp what is true or grasp what is false as always being that way" (*Met.* IX 10 1051^{b}17–1052^{a}11).
Indivisible things: That is, pure forms (III 5 429^{b}13–15n), which are indivisible because, since they are not a *this* (form) *in this* (matter), are not expressible in propositions or thoughts in which the form is predicated or said of the matter.
In those in which there is both falsehood and truth, there is already some sort of combination of intelligible objects as into one: "Just as some intelligible objects (*noêma*) in the soul are neither true nor false, whereas others are already necessarily one or the other, so it is with voiced sounds too. For falsity and truth are concerned with mode of combination and division. Thus names and verbs by themselves—for example, 'human' or 'pale' when nothing further is added—are like the intelligible objects that are without mode of combination and division, since so far they are neither true nor false. An indication of this is that even 'goat-stag' signifies something (*ti*) but not, as yet, anything true or false—unless is or is not (*to einai ê mê einai*) is added" (*Int.* 1 16^{a}9–18); "[In] the case of understanding and syllogizing about unchanging objects . . . the end is a theoretical proposition, since when one has understood the two premises, one has understood—that is, combined—the conclusion" (*MA* 7 701^{a}7–11). The latter text extends the notion of combination from a proposition (where a subject and predicate get combined into a single intelligible object) to a deduction or syllogism in which the conclusion is in the relevant way a combination of the premises.
As Empedocles said: B57 = TEGP 118 F71.

Note 368

Even if [it understands] the pale thing not to be pale, it combines not-pale [with it]: Omitting φῇ, τὸ λευκὸν καὶ which, if added with OCT, gives the sense "even if someone says, the pale thing is not-pale, he combines pale and not-pale."

Note 369

It is possible, though, to say that all these are also cases of division: If the unity in an intelligible object is the result of the understanding combining two things (as in predicating one of the other), the object can also be thought of as a division (for example, into subject and predicate).

Note 370

But since what is indivisible is twofold, either potentially so or actively so, nothing prevents someone from grasping what is indivisible when his understanding grasps a length (for this is actively indivisible): The background puzzle is this: An abstract or intelligible line L (which is the only sort that can be an object of understanding) is divisible, so how can someone whose understanding grasps L be grasping what is indivisible? Answer: What is indivisible is twofold (or, things are said to be indivisible in two ways), potentially divisible or actively divisible. L is potentially divisible because each of its halves can be grasped as unified intelligible objects in separate acts of understanding—indeed, L itself can be grasped as composed out of—and so as divisible into—its two halves in a single act of understanding (III 6 430^{b}10–14). But when L is grasped in a single act of understanding as not composed out of its halves or other segments, then L is actively or actually indivisible: "the double line is composed of two half lines, at any rate *potentially*. For their actuality separates them [and so destroys the double line]" (*Met.* VII 13 1039^{a}6–7).

Note 371

Things that are indivisible, though, not with respect to quantity, but in form, he understands in an indivisible time and with an indivisible part of the soul: Reading τὸ δὲ μὴ κατὰ τὸ ποσὸν ἀδιαίρετον ἀλλὰ τῷ εἴδει νοεῖ ἐν ἀδιαιρέτῳ χρόνῳ καὶ ἀδιαιρέτῳ τῆς ψυχῆς here with the mss. and not with OCT following III 6 430^{b}20.

Note 372

But coincidentally, and not in the way that those things are, the thing by which he understands and the time in which he understands are divisible, but in the way that those things are, indivisible: Reading κατὰ συμβεβηκὸς δέ, καὶ οὐχ ᾗ ἐκεῖνα, διαιρετὰ ᾧ νοεῖ καὶ ἐν ᾧ χρόνῳ, ἀλλ᾽ ᾗ ἐκεῖνα, ἀδιαίρετα with the mss. for OCT κατὰ συμβεβηκὸς δέ, καὶ οὐχ ᾗ ἐκεῖνα διαιρετὰ ὃ νοεῖ καὶ ἐν ᾧ χρόνῳ, ἀλλ᾽ ᾗ ἀδιαίρετα ("coincidentally, however, and not in the way that those things are divisible, the thing he understands and the time in which he understands are divisible, but in the way they are indivisible"), but punctuating with Ross and accepting his addition of ἐκεῖνα, although adding a comma after it. The reading of ὃ νοεῖ ("the thing he understands") for the mss. ᾧ νοεῖ ("that by which he understands") masks the connection with the previous sentence ("what is indivisible, however, not with respect to quantity, but in form, he understands in an indivisible time and with an indivisible part of the soul") and makes the final clause (ἀλλ᾽ ᾗ ἀδιαίρετα) very hard to understand. The overall meaning of the text I have translated is this: "But coincidentally, and not in the way that those things are that are indivisible in form rather than quantity, the thing by which he understands something divisible in quantity and the time in which he understands it are divisible, but in the way that those things are indivisible, they are indivisible." This is followed by an explanation, in the next sentence, of the final clause.

Note 373

A point (*stigmê*): "What is indivisible in quantity, when it is indivisible in all dimensions and lacks position, is said to be a *unit*, and when it is indivisible in all dimensions and has position, a *point*" (*Met.* V 6 1016^{b}24–26); "The one is said to be what it is and is made clear from the contrary, the indivisible from the divisible, because the plurality and the divisible is more perceptible than the indivisible, so that in account the plurality is prior to the indivisible, because of perception" (X 3 1054^{a}26–29).

Division (*diairesis*): A *diairesis* here is a cut, not a segment resulting from a cut.

Whatever is in this way indivisible is made clear in the way a lack (*sterêsis*) **is:** "But since it belongs to one science to get a theoretical grasp on opposites, and being many is opposed to being one (and to get a theoretical grasp on the denial and the lack belongs to one science, because in both cases we are getting a theoretical grasp on the one thing of which it is the denial or the lack" (*Met.* VII 2 1004^{a}9–12); "Scientific knowledge is an account, and the same account makes clear both the thing and its lack, except not in the same way—that is, in a way it is of both, but in a way it is rather of the existence of the thing. And so it is also necessary that these sorts of sciences should be of contraries, but of one intrinsically and of the other non-intrinsically. For the account too is of one intrinsically and of the other in a way coincidentally. For it is by denial and removal that it makes the contrary clear. For the contrary is the primary lack, and this is the removal of the other [positive] contrary" (IX 2 1046^{b}7–15).

Lack (*sterêsis*): "Something is said to lack something in one way if it does not have one of the attributes that something or other naturally has, even if this thing itself does not naturally have it—for example, a plant is said to lack eyes. In another way if what it or its genus naturally has, it itself does not have—for example, a human who is blind and a mole lack sight in different ways, the one in contrast to its genus, the other intrinsically. Further, if it does not have what it is natural for it to have when it is natural for it to have it. For blindness is a lack, but a person is not blind at any and every age, but only if he does not have sight when it is natural for someone to have it. Similarly, a person is said to be blind if he does not have sight in that in which, in virtue of which, in relation to which, and in the way in which, is natural. Further, the forceful taking away of a given thing is said to be a lack of it" (*Met.* V 22 1022^{b}22–32); "a lack is a denial [of a predicate] to some determinate kind (*genos*)" (IV 6 1011^{b}19–20).

Note 374

The same account—that whatever is in this way indivisible is made clear in the way a lack is—applies to the other cases (for example, how we know the bad or the black), since we know them in a way by their contrary: "The black is the lack of white" (*Met.* X 2 1053^{b}30–31). Similarly, because "the bad belongs to what is without a limit, as the Pythagoreans portrayed it, and the good to what is definite, whereas there is only one way to be correct" (*NE* II 6 1106^{b}29–31), it seems that the bad must be defined as the lack of the good, not the other way around.

Note 375

But what knows must be potentially [the contrary] and in it [the contraries] must be one: Reading ἕν εἶναι ἐν αὐτῷ with Polansky and mss. L, X for OCT †ἐνεῖναι ἐν αὐτῷ†.

Note 376

If to something there is not a contrary of its causes, it knows itself and is an activity and separable: Contraries differ maximally in the same genus (*Met.* X 4 1055^{a}27–28), which is in relevant ways like matter (VII 12 1038^{a}6–8). Hence "nothing is contrary to the primary thing, since all contrary things have matter, and such things are potential" (XII 10 1075^{b}21–23). The primary thing referred to is the primary god, the unmoved mover of all things, who is separable from matter (6 1071^{b}21), in essence an activity (1071^{b}20), and a knower or contemplator of himself: "It is itself, therefore, that it understands, if indeed it is the most excellent thing, and it is the active understanding that is an active understanding of active understanding" (9 1074^{b}33–35).

Note 377

An affirmation (*phasis*), however, is something [predicated] of something (*ti kata tinos*), as too is a denial, and each one is either true or false: Aristotle often distinguishes between affirmation (*kataphasis*) and annunciation (*phasis*). An affirmation is something said of or predicated of something, whereas an annunciation is not: "A *logos* is a significant voiced sound some part of which is significant when separated—as an annunciation (*phasis*), not as an affirmation (*kataphasis*). I mean, for example, that human signifies something, but not that the thing is or is not (though it will be an affirmation or denial if something is added); the single syllables of human, by contrast, signify nothing" (*Int.* 4 16^{b}26–31). But sometimes, as in the present text, he fails to keep the distinction in mind, employing *phasis* when he should have employed *kataphasis*. For a use of *phasis* that is properly in accord with this doctrine, see III 7 431^{a}8.

Note 378

By contrast, not all understanding is such, but that of the what-it-is in the sense of the essence is true, and is not something [predicated] of something: When we actively understand an essence we do not do so by predicating something of something. And the reason we do not is that an essence is a form, not a form said or predicated of matter (*Met.* VIII 3 1043^{b}29–32). What happens instead is that the presence of the essence to the understanding is announced, as that of a guest might be, in a way that is analogous to touching something. For it is the essence itself and not a representation of it that the understanding grasps: "In the case of those things that have no matter, what understands and what is understood are the same, since theoretical scientific knowledge and what is known in that way are the same" (III 4 430^{a}3–5). That is what makes touching the appropriate analogue (I 1 403^{a}14, 3 407^{a}15–18). For while we might think that we see not, for example, people, but their colors and shapes, we do not so readily think parallel thoughts about touching.

Just as the seeing of a special object is true, but seeing that the pale is a human or not is not always true, so it is also with [understanding] what is without matter: Understanding is "the visual perception of intelligible things" (*Protr.* B24), but differs from sight in that while a person can have eyes that are incapable of active seeing, he cannot have an understanding that is incapable of inactive understanding, since understanding is "in substance [or essence] an activity" (*DA* III 5 430^{a}18–22). That is why the condition in understanding corresponding to blindness would be "wholly lacking the part that understands" (*Met.* IX 10 1052^{a}3–4).

Note 379

Active scientific knowledge, however, is the same as its object, whereas potential scientific knowledge is prior in time in the individual, but in general it is not even prior in time: This sentence also occurs in the mss. at III 6 430^{a}19–21.

Active scientific knowledge is the same as its object: Understanding (I 1 402^{b}12–13n) is usually distinguished from scientific knowledge (II 1 412^{a}10n) on the grounds that it is exclusively knowledge of scientific starting-points, while the latter is exclusively concerned with what is demonstrable from them. However, scientific knowledge "in the full sense" is active understanding (II 5 417^{a}28–29). So, despite the change in terminology, it is still understanding that is under discussion.

Potential scientific knowledge is prior in time in the individual, but in general it is not even prior in time: The priority of productive or active understanding or scientific knowing to the potential sort is argued for in the following difficult passage: "Geometrical diagrams [or constructions] are discovered actively. For people discover them by actively dividing. If they had already been divided, things would have been evident. But as it was they were present potentially. Why is the triangle two right angles? Because the angles around one point are equal to two right angles. If, then, the line had already been drawn upward parallel to the side, why this is so would have been immediately clear on seeing it. Why is the angle in a semicircle universally a right angle? Because if three lines are equal, namely, the two that form the base and the one dropped straight from the center, then it is clear on seeing it to the person who knows that. So it is evident that the things that are potentially are discovered when they are actively drawn. And the cause of this is that understanding is the activity, so that the potentiality [is discovered] from activity, and because of this they know by [actively] producing, since the single activity is posterior in coming to be" (*Met.* IX 9 1051^{a}21–33).

Note 380

All things that come to be do so from what is actual (*entelecheia[i]*): "In time [= in coming to be] activity [= actuality] is prior in this way: the active that is the same in form, though not in number, is prior. I mean this, that to this human who is already actively what he is and to the corn and to what is actively seeing, the matter and the seed and the capable-of-seeing, which are potentially a human and corn and seeing, but not yet actively so, are prior in time. Prior in time to these, however, are other things that are actively what they are, from which these came to be. For it is always from what potentially is that what actively is comes to be, as a result of what actively is—for example, human from human, musician as a result of musician. Always there is a first mover, and the mover is already active. For it was stated in the accounts concerned with substance that everything that comes to be, comes to be something, from something, and as a result of something, and this is the same in form as it" (*Met.* IX 8 1049^{b}17–29).

Note 381

The perceptible object [simply] causes the perceptual part to move from potentially [perceiving] to actively doing so, since the part is not affected or altered: See II 5 417^{b}2–9.

Note 382

Movement is the activity of what is incomplete: “The actualization of what is potential, when it is actively actual, not insofar as it is itself but insofar as it is movable, is movement” (*Met.* XI 9 1065^{b}21–23).

Whereas what is activity in the unconditional sense is something else, namely, the activity of what is complete: “Since, though, of the actions that have a limit none is an end, but all are in relation to an end—for example, making thin. For the things themselves, when one is making them thin, are in movement in this way, [namely,] that what the movement is for the sake of does not yet belong to them. These [movements] are not cases of action, at least not of complete action, since none is an end; but the sort in which the end belongs really *is* an action. For example, at the same time one is seeing [a thing] and has seen [it], is thinking [something] and has thought [it], is understanding [something] and has understood [it], whereas it is not the case that [at the same time] one is learning [something] and has learned [it], nor that one is being made healthy and has been made healthy. Someone who is living well, however, at the same time has lived well, and is happy and has been happy. If this were not so, these would have to come to an end at some time, as when one is making [something] thin. But as things stand it is not so, but one is living and has lived. Of these, then, one sort should be called movements and the other activities. For every movement is incomplete, for example, making thin, learning, walking, building. These are movements and are certainly incomplete. For it is not the case that at the same time one is walking and has taken a walk, nor that one is building [something] and has built [it], or is coming to be [something] and has come to be [it], or is being moved [in some way] and has been moved [in that way], but they are different, as are one’s moving and having moved [something]. By contrast the same thing at the same time has seen and is seeing, is understanding and has understood. The latter sort, then, I call an activity, the former a movement” (*Met.* IX 6 1048^{b}18–35).

Note 383

[1] Perceiving, then, is like bare announcing and understanding: See III 6 430^{a}26–30n.

[2] But when [the perceived object] is pleasant or painful, [the soul], as if affirming or denying, pursues or avoids (*diôkei ê pheugei*) **it:** [1] When we perceive a proper perceptible, as when we understand a form or essence, we announce its existence, as we announce a guest, as opposed to predicating something of it, as we do in affirmation or denial: “truth or falsity consists in this—to touch and to announce is true (for affirmation and annunciation are not the same), but to be ignorant is not to touch” (*Met.* IX 10 1051^{b}24–25). [2] When, in addition, what is perceived is pleasant or painful, the soul pursues or avoids it, as if affirming something or denying it, since “what affirmation and denial are in the case of thought, that, in the case of desire, is just what pursuit and avoidance are” (*NE* VI 2 1139^{a}21–22). What turns annunciation into affirmation, then, is not that something is predicated of the perceptible object (for example, being pleasant) but that an action-causing or movement-causing desire is formed relative to it. It is to signal the arrival of this desire on the scene that two transformations occur in [4]–[5] (notes below). First, *diôkei* ("pursues") is replaced with *hê orexis* ("desire"). Second, *pheugei* ("avoids") is replaced with *hê phugê*—where *pheugei* is the negative equivalent of *orexei* (active avoiding) and *hê phugê* ("aversion") is the negative equivalent of *orexis* ("desire"). Hence in [5] *to pheutikon* is the aversive part, just as *to orektikon* is the desiring one. Since both are usually referred to simply as *to orektikon*, [5] points out that *to pheutikon* and *to orektikon* are the same, although the being for them is different, since one is the desiring part considered as being for something, and the other is the same part considered as being against something, or as an aversion to it.

Note 384

[3] In fact, to feel pleasure or pain is to be active with regard to the perceptual mean in relation to what is good or bad, as such: The perceptual mean mentioned is the constituent in a perceptual part that functions like a laboratory balance or weighing scale enabling it to detect differences in proper perceptibles, which activate it by tilting it, as it were, one way or another: "The mean is capable of discerning, since in relation to each extreme it becomes the other. And just as what is to perceive white and black must be neither of them actively, although both potentially (and similarly too in the case of the other perceptual capacities), so in the case of touch it must be neither hot nor cold" (II 11 424^{a}5–10). Depending on the makeup of these perceptibles, the activation of the perceptual part is either pleasant or painful: "Things—for example, the high-pitched, sweet, or salty—are pleasant when, being pure and unmixed, they are brought into the ratio, since they are pleasant then. And in general a mixture, a consonance, is more pleasant than either high or low pitch, and for taste what can be [further] heated or cooled. For the perceptual capacity is a ratio, and excessive things dissolve or destroy it" (III 2 426^{b}3–7). The perception of a proper perceptible is pleasant, then, provided it is within the limits determined by—or consonant with—the structural ratio of the perceptual capacity (and is painful otherwise). More precisely, since a perceptual capacity functions better within some areas of its range of operation than others, so that we see better in brighter light than in dimmer, perception is pleasant in the optimal range, the range of maximal consonance: "in the case of each perceptual capacity, the best activity will be . . . the activity of the subject that is in the best condition in relation to the most excellent of its objects. And this activity will be the most complete and most pleasant" (*NE* X 4 1174^{b}18–20).

Note 385

[4] Both aversion and desire (*hê phugê de kai hê orexis*) **as active** (*kat' energeian*) **are the same, and [5] the desiring part** (*to orektikon*) **and the aversive part** (*to pheutikon*) **are not distinct either from one another or from the perceptual one, although the being for them is distinct:** When [4] says that desire and aversion are the same "as active," it does not mean that active avoiding is the same as active pursuing, but rather that the activation of the two is the same, in that they are activated in the same way, namely, by pleasant or painful perceptible objects. This point is reinforced by [5], which reminds us that the two parts are also the same, differing only in their being. The other point made in [5], following on [3], is that the perceptual part, considered as being activated by a pleasant or painful object, is the same as the desiring, or avoiding (aversive), one—again, differing from this only in its being. What this difference amounts to is explained in [1] and [2]. Considered as a kind of perception, the perception of pleasure and pain is just annunciation; considered as directly giving rise to action or animal movement it involves desire, and is the sort of affirmation or denial that is pursuit or avoidance. Perception of this sort we may call *motivating perception*, since when an animal perceives in this way it is moved (though it may repress the movement) to pursue or avoid.

Note 386

[6] To the understanding soul, however, appearances (*phantasmata*) are like perceptions (*aisthêmata*): The goal of the discussion that follows (down to III 7 431^b10) is to explain how *motivating perception* (previous note) is involved in understanding. [6] picks up from [2], explaining that understanding functions in the same way in relation to good or bad that perception does in relation to pleasant and painful. For *phantasmata* are structural analogues of *aisthêmata*, and so have an effect on understanding similar to the one *aisthêmata* have on perception.

Note 387

[a] To the understanding soul, however, appearances are like perceptions. [b] And when it affirms or denies good or bad, [c] it avoids or pursues. [d] That is why (*dio*) the soul never understands without an appearance: To see the line of thought, consider the contrapositive. Suppose, contrary to [d], that the understanding did understand without an appearance. Then, since [a] appearances are like perceptions to it, there would be nothing perceptual about [b] its affirming good or bad. So there would be no natural fit between its affirmations and the environment in which it perceives itself to be. So the understanding soul, contrary to [c], would not avoid or pursue, since it would not know what in its environment to avoid or pursue.

Note 388

[7] But just as the air made the eye-jelly be such-and-such, however, and it in turn something else, and hearing likewise, the last thing is one, and a single mean, but the being for it is manifold: [7] picks up from [3]. The problem, as in the case of the perception of complexes of special perceptibles to which Aristotle refers, is that some mean must discern the sorts of arrays of perceptibles that complex objects, such as substances, present to motivational perception, and thus to understanding. The solution proposed is therefore the same as in the case of perception generally (III 2 427^a2–14n). The mean must be like a limit—a point where many different simpler means, corresponding to each of the perceptual capacities involved, can meet and register the effects of all their perturbations. It will thus be one in number, but the being for it will be manifold. What is different in this case is just that some constituents of the array will be pleasant or painful, so that understanding, instead of just registering or announcing the existence of the array when activated by it, will do the kind of affirming or denying that is pursuing or avoiding.

Note 389

What the thing is by which it discerns that sweet and hot differ has been stated before: At III 2 426^{b}12–427^{a}14.

But we should also say the following: The focus here is on the perceptible objects and what it is about them that enables them to be jointly perceived.

Note 390

It is indeed one thing, but in the way a defining mark (*horos*) is: What is referred to as a *horos* (I 2 404^{a}9n) here is called a *peras* ("limit") at III 2 427^{a}13. For a *peras*, like a *horos* or a *stigmê* ("point"), simultaneously divides what is on one side of it from what is on the other and joins the two together (III 2 427^{a}10n).

And, since hot and sweet are one by analogy: They are one by analogy because hot occupies a similar position in the hot–cold spectrum of special perceptibles discerned by touch to the one that sweet occupies in the sweet–bitter spectrum discerned by taste. Thus hot : cold : : sweet : bitter.

And in number: Hot and sweet are one in number, because the same one thing presented to perception is both hot and sweet.

It is with respect to each of them as they are with respect to each other: To discern hotness correctly touch must be in a mean between hot and cold, and so must stand to hotness in the way such a mean does. The mean in taste must similarly stand to sweetness. Hence the single mean that discerns both of them as belonging at the same time to one and the same thing must stand to each in a way that they—because they occupy similar places in their respective spectra—stand to each other.

Note 391

What then (*ti gar*) is the difference between puzzling over how it discerns things that are not the same in genus and how it discerns contrary ones—for example, white and black? The force of the question is: Given what has just been said, what is the difference between asking how the perceptual capacity in question discerns both hot and sweet (which are not in the same genus) and how it discerns white and black (which are in the same genus but are contraries). The next sentence employs alternation of ratios to explain why there is no difference.

Note 392

Accordingly, let A (white) be to B (black) as C is to D, as those are to each other, so that, the alternation [namely, A : C : : B : D] also holds: Retaining ὡς ἐκεῖνα πρὸς ἄλληλα·. A and B are contraries in the same genus, C and D are in different genera, but—as in the case of hot and sweet—C occupies a similar position in its spectrum (whatever it is) to the one A occupies in the white–black spectrum, and similarly for B and D. In other words, C and D are contraries too. Hence, by the argument used earlier in the case of hot and sweet, a single mean must stand to

A and C (and to B and D) as they stand to each other. But A and C and B and D belong to different genera.

Note 393

If, then, CA belong to one thing, it will be the case, as for DB too: Reading εἰ δὴ τὰ ΓΑ ἑνὶ εἴη ὑπάρχοντα, οὕτως ἕξει, ὥσπερ καὶ τὰ ΔΒ with OCT for the mss. εἰ δὴ τὰ ΓΔ ἑνὶ εἴη ὑπάρχοντα, οὕτως ἕξει, ὥσπερ καὶ τὰ ΑΒ. Since A and B are contraries, as are C and D, neither pair can belong to the same thing, as the mss. reading would require. Moreover, the entire point of the argument would be lost.

Note 394

[8] The part that understands, then, understands the forms in the appearances, and, as in the previous cases, what is to be pursued or avoided is distinguished for it, and so, even outside of perception, when it is dealing with appearances, it is moved to pursuit or avoidance: Because it makes use of *phantasmata* rather than *aisthêmata*, the understanding can function even "outside of perception," or when perception is not occurring. That is one difference between it and motivational perception. The other is that what understanding understands is not the *phantasmata* themselves but the forms that are in them—intelligible objects (*noêmata*), then, not perceptible ones, and yet accessible to understanding only as presented in perceptible ones, or in the *phantasmata* that are their structural analogues.

Note 395

[9] Perceiving the beacon, because it is fire, by the common (*tê[i] koinê[i]*) **[perceptual capacity], seeing it moving, it recognizes** (*gnôrizei*) **that it is the enemy:** The previous discussion (especially III 7 431^{a}20–^{b}1) has explained how the different special perceptible capacities can function together, or in common, to discern complex arrays of special perceptibles belonging to a single substantial subject, such as a fiery beacon. III 1 425^{a}15–30 has given a parallel explanation of how these capacities function together in discerning the common perceptibles, such as movement. Just as in that discussion, then, there is no reason to think that a new perceptual capacity, beyond the special ones functioning in common, is being countenanced here (425^{a}27–28n).

But [10] sometimes, by means of the appearances or intelligible objects that are in the soul, it calculates and deliberates about future things on the basis of present ones: In [9] the transition from perception to understanding is direct, in that understanding engages in no explicit reasoning but produces an action directly on the basis of perceptual input and its own extraction of intelligible objects ("the enemy") from it: "How does it happen that understanding is sometimes followed by action and sometimes by inaction, that is, sometimes by moving and sometimes by not moving? What happens seems parallel to the case of understanding and syllogizing about unchanging objects. There, however, the end is a theoretical proposition (for when one has understood the two premises, one has understood—that is, compounded—the conclusion), whereas here the conclusion that follows from the two premises [being compounded] becomes the action" (*MA* 7 701^{a}7–13). In [10], by contrast, the understanding does engage in explicit reasoning. Thus it uses *phantasmata* retained in memory, or the *noêmata* in them, to calculate and deliberate about what to do. In subsequent elaboration of the account expressed in [1]–[10], however, Aristotle makes two things explicit. First: [11] "Understanding evidently does not move anything without desire—for wish is a desire, and when movement is in accord with calculation, it is in accord with wish. . . . Hence what moves us in every case is the object of desire, which is either the good or the apparent good; and not every good but the good done in action" (*DA* III 10 433^{a}22–29). Second, intelligible objects, though understood in *phantasmata*, are importantly different from them: [12] "Without perception, no one could learn or comprehend anything, and when one contemplates, one must at the same time contemplate an appearance. For appearances are like perceptions, except that they are without matter. However, imagination is different from affirmation and denial, since truth and falsity involve a combination of intelligible objects. The primary intelligible objects (*ta prôta noêmata*), though, what distinguishes them from appearances? Or isn't it that neither they nor the others are appearances, although they are not found without appearances" (*DA* III 8 432^{a}7–14). The primary intelligible objects are substantial or pure forms (III 5 429^{b}13–15n).

And so in cases of action generally: Reading ἐν with Hamlyn and the mss. for OCT ἕν ("and in general will do one thing or another").

Note 396

What is unrelated to action too, namely, the true and the false: "In the case of thought that is theoretical, however, and neither practical nor productive, the good state and the bad state are truth and falsity (since that is the function of every part involving thought) but in the case of the part involving practical thought, the good state is truth in agreement with correct desire" (*NE* VI 2 1139^{a}27–31).

The true and the false are in the same genus as the good and the bad: "This is the way the object of desire and the intelligible object moves things: it moves them without being moved. Of these objects, the primary ones are the same. For the [primary] object of appetite is the apparently noble [≈ the apparently good], and the primary object of wish is the really noble. But we desire something because it seems [noble] rather than its seeming so because we desire it. For the starting-point is the active understanding. And understanding is moved by intelligible objects, and what is intrinsically intelligible is the one column [of opposites], and in this substance is primary, and in this the simple one and an activity—unity and simplicity are not the same, since unity signifies a measure, whereas simplicity signifies that the thing itself is a certain way. But the noble, too, and what is choiceworthy because of itself are in the same column, and what is primary is always best or analogous to the best" (*Met.* XII 7 1072^{a}26–1072^{b}1). The columns of opposites referred to are two columns of starting-points (I 5 986^{a}23), which, as such, are objects of understanding (II 1 993^{b}11). One of them, however, because it consists of lacks (XI 9 1066^{a}14–16), is not intrinsically intelligible, but intelligible through the thing of which it is a lack (*DA* III 6 430^{b}21).

But they differ in that the first is unconditional: A proposition is true or false unconditionally or absolutely, not true or false for someone. "To say of what is that it is not, or of what is not that it is, is false, whereas to say of what is that it is, or of what is not that it is not, is true, and so he who says of anything that it is, or that it is not, will say either what is true or what is false" (*Met.* IV 7 1011^{b}26–28); "it is not because we truly think you to be pale that you are pale, but it is because of your being pale that we who say this grasp what is true" (IX 10 1051^{b}21–23).
The second relative to someone: "Should we say that unconditionally and in truth the object of wish is the good, but to each person it is the apparent good? To an excellent person, it is what is truly the proper [= primary] object; to a base one, it is whatever random thing it happens to be. . . . In the case of ordinary people, however, deception seems to come about because of pleasure, which appears to be a good thing when it is not. So they choose what is pleasant as good and avoid what is painful as bad" (*NE* III 4 1113^{a}23–^{b}2); "Appetite is concerned with what is pleasant and what is painful" (III 2 1111^{b}16–17); "We should pray that unconditionally good things will also be good for us, while choosing the ones that are good for us" (V 1 1129^{b}5–6).

Note 397

As for things said to exist in abstraction, it is as if [the understanding] actively understood the snub (*to simon*) **not insofar as it is snub, but separately insofar as it is concave** (*koilon*), **[namely,] without the flesh in which it understood the concavity** (*to koilon*) **to be—that is the way it is with mathematical objects, which are not separable, but which it understands as separable, when it understands them:** Reading τὰ δὲ ἐν ἀφαιρέσει λεγόμενα ὥσπερ, εἰ τὸ σιμὸν ᾗ μὲν σιμὸν οὔ, κεχωρισμένως δὲ ᾗ κοῖλον ἐνόει ἐνεργείᾳ, ἄνευ τῆς σαρκὸς ἂν ἐνόει ἐν ᾗ τὸ κοῖλον—οὕτω τὰ μαθηματικά οὐ κεχωρισμένα, ὡς κεχωρισμένα νοεῖ, ὅταν νοῇ ἐκεῖνα for OCT τὰ δὲ ἐν ἀφαιρέσει λεγόμενα ὥσπερ, εἴ τις τὸ σιμὸν ᾗ μὲν σιμὸν οὔ, κεχωρισμένως δὲ ᾗ κοῖλον ἐνόει ἐνεργείᾳ, ἄνευ τῆς σαρκὸς ἂν ἐνόει ἐν ᾗ τὸ κοῖλον—οὕτω τὰ μαθηματικά, οὐ κεχωρισμένα, ὡς κεχωρισμένα νοεῖ, ὅταν νοῇ ᾗ ἐκεῖνα.
The snub (*to simon*): See III 4 429^{b}13–14.

Note 398

In general, though, the active understanding is its objects: More carefully expressed at III 4 430^{a}3–5 as the claim that *when the intelligible object is a pure form*—like concavity but not like the snub—then the active understanding of it is identical to it.

Note 399

Whether or not it is possible for the understanding to understand any separated things when it is itself not separated from a spatial magnitude must be investigated later: "The cause of why it is not possible to understand anything without spatial continuity (*sunechous*) [≈ spatial magnitude], or beings that are not in time without time, is another story. But it is necessary that spatial magnitude and change should be known by the same means as time. And an appearance is an affection of the common perceptual capacity [reading καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν here with the mss.]. So it is evident that knowledge of these is due to the primary perceptual part, and memory—even the memory of intelligible objects—does not occur without an appearance. So memory will belong coincidentally to the understanding, but intrinsically to the primary perceptual part" (*Mem.* 1 450^a7–14). The problem adverted to, then, but not further discussed in Aristotle's extant works, is of how an understanding like ours, which always understands intelligible objects as embodied in appearances (perception-based sensory images) can understand pure forms, which are not embodied in such appearances.

An analogous problem arises in the case of time, and how our understanding, which seems to be in time, can understand a being like the primary god, who, as a pure form or actuality, is outside space and time: "It is clear that neither place nor void nor time exists outside the [primary or outermost] heaven. . . . That is why the things there are of such a nature as not to be in a place, nor does time make them age, nor does anything situated beyond the outermost spatial movement undergo change. Instead, unalterable and impassive and possessing the best and most self-sufficient life they are achieving their end for all eternity (*aiôna*). And in fact this name *aiôn* had divine significance for the ancients. For the end that encompasses the lifetime of each animal has been called the life span (*aiôn*) of each. For the same reason the end of the entire heaven, and the one that encompasses the whole of time and its unlimitedness, is eternity (*aiôn*), having got the name from its always existing (*aiei einai*), immortal and divine" (*Cael.* I 9 279^a11–28). Nonetheless, Aristotle seems to have thought that this problem, at least, was solvable. For he encourages us to immortalize ourselves: "If, then, understanding is something divine in comparison with the human element, so also a life in accord with it is divine in comparison with human life. We should not, however, in accord with the makers of proverbs, 'think human things, since you are human' or 'think mortal things, since you are mortal' but, rather, we should as far as possible immortalize (*athanatizein*), and do everything to live in accord with the element in us that is most excellent. For even if it is small in bulk, in its power and esteem it far exceeds everything" (*NE* X 7 1177^b31–1178^a2). Moreover, he thinks we can succeed in doing so: "And the understanding actively understands itself by partaking of the intelligible object. For it becomes an intelligible object by touching and understanding one, so that understanding and intelligible object are the same. For what is receptive of the intelligible object and of the substance is the understanding, and it is active when it possesses it, so that active understanding rather than receptive understanding seems to be the divine element that understanding possesses, and contemplation seems to be most pleasant and best. If, then, that good state [of activity], which we are sometimes in, the [primary] god is always in, that is a wonderful thing, and if to a higher degree, that is yet more wonderful. But that is his state. And life too certainly belongs to him. For the activity of understanding is life, and he is that activity; and his intrinsic activity is life that is best and eternal. We say, then, that the god is a living being that is eternal and best, so that living and a continuous and everlasting eternity belong to the god, since this is the god" (*Met.* XII 7 1072^{b}19–30). His confidence, no doubt, stems from his belief that understanding, or contemplating, is an *energeiai*, not a *kinêsis* (an activity, not a movement), and so does not itself take up time in the way the latter does, since it is complete and has accomplished its end at every moment (III 7 431^{a}6–7n). Thus when we contemplate what is itself an activity and timeless, our active understanding is as timeless as its object.

We may conjecture, then, that the original problem about whether or not it is possible for the understanding to understand any separated things when it is itself not separated from a spatial magnitude should have a parallel solution. *We* are not separated things, and so when we contemplate we always do at the same time contemplate an appearance. Our understanding, by contrast, is separable from our body and from spatial magnitudes generally, and so it can—or can when separated —contemplate the primary god, who is himself separate from all such magnitudes, without at the same time contemplating an appearance.

Note 400

The hand is an instrument of instruments (*organon organôn*): "It is not because they have hands that human beings are most practically-wise (*phronimôtatos*), but because they are the most practically-wise of animals that they have hands. For the most practically-wise animal would use the greatest number of instruments well, and the hand would seem to be not one instrument but many, since it is, as it were, an instrument for instruments (*organon pro organôn*). . . . For the hand becomes a talon, claw, horn, spear, sword, and any other weapon or instrument. For it can be all of these because of its capacity to grasp and hold them all. And for this the form of the hand has been adapted by nature [reading ταύτῃ δὲ συμμεμηχανῆσθαι τὸ εἶδος τῇ φύσει τῆς χειρός]" (*PA* IV 10 687^{a}16–^{b}7).

So too the understanding is a form of forms (*eidos eidôn*) **and a perceptual capacity a form of perceptible objects:** Because each can take on all the forms without the matter of the relevant sort, whether intelligible or perceptible, in the way that the hand can become whatever instrument or weapon it grasps and holds (II 12 424^{a}17–28, III 4 430^{a}7–8).

Note 401

The primary intelligible objects, though, what distinguishes them from appearances: The primary intelligible objects are substantial or pure forms (III 5 429^{b}13–15n), which, as such, do not involve one thing being affirmed or denied of another. Hence they cannot differ from appearances in that way.

Or are the others not appearances, although they are not found without appearances? No intelligible object is found without an appearance, because the understanding—at least, when not separate from the body or some perceptible magnitude (III 7 431^{b}17–19)—"understands the forms in the appearances" (431^{b}2).

Note 402

The soul of animals has been defined by two capacities: See III 3 427^{a}17–19.

Separable either as a spatial magnitude or in account: See I 1 403^{a}10–15n, also II 2 413^{b}13–27.

Note 403

The ones that some people—in distinguishing them—call the rationally calculative part, the spirited part, and the appetitive part: The reference is to Plato, *Rep.* IV 435c–441c, where the soul is divided into these three parts.

Others the part that has reason and the non-rational part: "Enough has been said about some aspects of the soul in the external accounts too, and we should make use of these—for example, that one part of the soul is non-rational whereas another part has reason. Whether these are distinguished like the parts of the body or like anything else that is divisible or whether they are two in definition but inseparable by nature (like convex and concave in a curved surface) makes no difference for present purposes" (*NE* I 13 1102^{a}26–32). The "external accounts" referred to (as at *Ph.* IV 10 217^{b}30, *Met.* XIII 1 1076^{a}28, *NE* VI 4 1140^{a}2, *EE* I 8 1217^{b}20, II 1 1218^{b}32, *Pol.* III 6 1278^{b}30, VII 1 1323^{a}21) could be to popular works written by Aristotle himself and "in circulation" (*NE* I 5 1096^{a}3), like "the common accounts" of *DA* I 4 407^{b}29, or to accounts or arguments, not necessarily developed by him, that are generally known. The context here suggests that Aristotle has not his own works in mind but those of others. Nonetheless, he does himself make use of this way of dividing the soul—for example, in *NE*.

Note 404

In the rationally calculative part there is wish (*boulêsis*), and in the non-rational part appetite and spirit: "I mean by something's being 'deliberative (*bouleutikên*)' that deliberation is its starting-point and cause—that is, the agent desires because of having deliberated" (*EE* II 10 1226^{b}19–20). Hence wish is the quintessential deliberative desire.

Wish (*boulêsis*): As the quintessential deliberative desire (*NE* III 1112^{a}10–12), "wish is always found in the rationally calculative part" (*Top.* IV 5 126^{a}13), so that "when something is moved in accord with rational calculation, it is moved in accord with wish" (*DA* III 10 433^{a}23–25). At *Pol.* VII 15 1334^{b}22–25, however, Aristotle deviates from what is otherwise his "official" view: "spirit and wish, and furthermore appetite, are present in children straight from birth, whereas rational calculation and understanding naturally arise as they grow." But the explanation for the deviation is not far to seek. For when Aristotle discusses wish in the process of trying to explain deliberate choice (*prohairesis*), he writes: "[Deliberate choice] is not *wish* either, although it appears to be a close relative of it. For there is no deliberate choice of impossible things, and if someone were to say he was deliberately choosing them, he would seem silly. But there is wish for impossible things—for example, immortality. There is also wish concerning the sorts of things that could never come about through ourselves—for example, that a certain actor or athlete should win a victory prize. No one deliberately chooses things like that, but things he thinks can come about through him. Further, wish is more for the end, whereas deliberate choice is of the things that further the end" (*NE* III 2 1111^{b}19–27). Understood in this more-or-less commonsense way, there is nothing especially rational about wish, and we can easily see why children are said to have it. The wish, however, that is a “desire involving rational calculation” (*Rh.* I 10 1369^{a}2), which is the one employed here, is clearly an Aristotelian regimentation of the commonsense notion. Its attribution to children, who lack rational calculation, makes this especially clear.

Note 405

Movement involved in growth and withering: See I 3 406^{a}12–14n.
The generative and nutritive part: See II 4 416^{a}19n.

Note 406

Sleep and breathing in and out we must investigate later: The first is discussed in *On Sleep*, *On Sleep and Waking*, *On Dreams*, and *On Divination in Sleep*, the second in *On Youth and Old Age, Life and Death, and Respiration.*

Note 407

Perambulatory movement (*poreutikên kinêsin*): Sometimes called “progressive movement.”

Note 408

This movement is always for the sake of something and involves imagination and desire: Reading καὶ ὀρέξεώς with OCT for the mss. ἢ ὀρέξεώς (“this movement is always for the sake of something and involves imagination or desire”). The next sentence together with III 10 433^{a}31–^{b}1 favor the emendation.
And involves imagination and desire: The desiring part is always accompanied by the perceptual one: “if the perceptual one belongs, then so does the desiring one” (II 3 414^{b}1–2). It is not clear, however, that it is always accompanied by imagination: “perception is always present but not imagination” (III 3 428^{a}8–9). Presumably, this is true of the many animals that have perception, but “remain stationary and unable to move to the end” (432^{b}19–21), an issue raised explicitly at III 11 433^{b}31–434^{a}5.

Note 409

There are many animals that have perception which remain stationary and unable to move to the end of their lives: See I 5 410^{b}19–20.

Note 410

Nature does nothing pointlessly: Also stated at II 5 415^{b}16–17, III 12 434^{a}31, and frequently elsewhere, for example, *PA* I 1 641^{b}12–29. The nature referred to might be (1) “the nature of the whole,” as it is called at *Met.* XII 10 1075^{a}11–12, considered (though perhaps not even there) as something beyond the formal natures of the various things that constitute the whole; (2) the nature that is constituted by those formal natures, but not as something beyond them; (3) some third option.
Leaves out none of the necessary things: That is, none of the elements in a thing’s nature that are necessary for life (III 12 434^{a}22–26, ^{b}10–18, 22–27), in contrast (at least sometimes) to other “luxury” parts that are not necessary for life, but do contribute to its enhancement—to the good life (13 435^{b}19–21).

Complete: See Introduction, pp. xvii–xix.
Disabled: II 4 415^{a}27n.

Note 411
Nor is it the understanding part—namely, the so-called understanding—that causes the movement: Reading τὸ νοητικὸν καὶ ὁ καλούμενος νοῦς with L and Jannone for OCT ἀλλὰ μὴν οὐδὲ τὸ λογιστικὸν καὶ ὁ καλούμενος νοῦς ("nor is it the rationally calculative part (*logistikon*), that is, the so-called understanding, that causes the movement") and treating καὶ as epexegetic. For the *logistikon*, discussed in *NE* VI 1 1139^{a}11–15, is the same as the *bouleutikon*, or deliberative part (*HA* I 1 488^{b}24, *MM* I 34 1196^{b}16, *Pol.* I 13 1260^{a}12), since "deliberating is the same as rationally calculating." Deliberating, however, is concerned with what is to be avoided or pursued in action, so that the argument Aristotle gives for its not being a cause of movement would be inapplicable to it: "The part of the soul that has reason is divided into two subparts, these being the deliberative and the scientific. That these are different will be evident from their subject matter. For just as color, flavor, sound, and smell are different from each other, so too nature has assigned different perceptual capacities to them (for sound we know by hearing, flavor by taste, and color by sight). By the same token, we must suppose it to be this way in all other cases. When, then, the subject matters are different, different too must be the parts of the soul by which we know them. Now an intelligible object (*noêton*) and a perceptible object (*aisthêton*) are different, and we know them through our soul. Hence the part of the soul concerned with perceptible objects is different from the one concerned with intelligible ones. But the deliberative and deliberately choosing part is concerned with perceptible objects and with things in the process of changing—that is, unconditionally speaking, with what comes to be and perishes. For we deliberate about things that are up to us to do or not to do in action, about which there is deliberation and deliberate choice whether to do or not do them. And these are perceptible objects that are in the process of changing, so that, according to this account, the deliberately choosing part of the soul pertains to perceptible objects" (*MM* I 34 1196^{b}15–34).

Note 412
The theoretical understanding does not get a theoretical grasp on anything doable in action (*prakton*): "Surely theoretical wisdom will not have a theoretical grasp on any of the things from which a human being will come to be happy (since it is not concerned with anything's coming to be)" (*NE* VI 12 1143^{b}19–20). As the next sentence shows, this should be understood as a claim about the intrinsic or essential nature of theoretical understanding, since coincidentally it can get a theoretical grasp on other things.
Doable in action (*prakton*): Verbals ending in *-ton*—of which *prakton* is an example—sometimes have (1) the meaning of a perfect passive participle ("done in action") and sometimes (2) express possibility ("doable in action"). A decree (*psêphisma*) seems to be *prakton* in sense (2), since it is a prescription specific enough to be acted on without further need for deliberation (*NE* VI 8 1141^{b}23–28). What it specifies is thus a possibility (a type of action) that many different particular

(token) actions might actualize. Particular objects of perception that are *prakton* (11 1143^{a}32–33, ^{b}4–5) seem to be so in sense (1).

Note 413

But even when it does get a theoretical grasp on something of that sort, it does not at once urge avoidance or pursuit: "Socrates the elder thought that the end [pursued in ethics] is knowledge of virtue, and he would inquire about what justice is, and courage, and each of the parts of virtue. It was reasonable that he did this. For he thought that all the virtues were types of scientific knowledge, so that someone at the same time turns out both to know justice and to be just. . . . This does hold in the case of the theoretical sciences. For there is nothing else to astronomy or to natural science or geometry except knowing and getting a theoretical grasp on the nature of the underlying subjects of these sciences—although, of course, there is nothing to prevent them from being coincidentally useful to us for many of the necessities of life" (*EE* I 5 1216^{b}2–16). The idea, as this passage about the Socrates of Plato's dialogues shows, is first that theoretical scientific knowledge is not intrinsically productive of action, since its intrinsic aim is knowledge only, but second that such knowledge can be coincidentally of considerable practical importance. It was Thales' knowledge of astronomy, for example, that enabled him to predict a bumper crop of olives, so that by cornering the market in olive presses during the off-season when they were cheap, he could make a fortune by leasing them out when the crop was harvested (*Pol.* I 11 1259^{a}5–33).

Note 414

Even when the understanding does prescribe and thought tells us to avoid or pursue something, we are not moved, but [sometimes] act in accord with our appetites, like a person who lacks self-control: "In the case of the types of pleasures and pains concerned with bodily gratifications, though—the ones that we say a temperate and an intemperate person are concerned with—a person who, without having deliberately chosen, goes to excess in pursuing these pleasant things and avoiding the painful ones (hunger, thirst, heat, cold, and all those concerned with touch and taste), but contrary to his deliberate choice and thought, is called 'lacking in self-control,' not with regard to such-and-such additional thing that he lacks self-control about, such as anger, but unconditionally and solely so" (*NE* VII 4 1148^{a}4–11).

Note 415

There is something else that has control of acting in accord with scientific knowledge, but not scientific knowledge itself: "Since, though, what is capable is capable of something, at some time, in some way (and however many other things must be present in the definition), and since some things are capable of producing movement in accord with reason and their capacities involve reason, whereas others are non-rational and their capacities non-rational, and the former capacities must be in an animate thing, whereas the latter can be in both it and an inanimate one, with the non-rational capacities, whenever what is capable of acting and what is capable of being affected meet up in the way appropriate to the capacity in question, it is necessary for the one to act and for the other to be affected, but with the rational capacities it is not necessary. For all these non-rational capacities are such that one is productive of one thing, whereas the rational capacities are productive of contrary ones, so that [if they produced them in the way the non-rational ones do] they will produce contraries at the same time. But this is impossible. There must, then, be something else that is the controlling factor. I mean by this desire or deliberate choice. For whichever of two alternatives an agent desires in a controlling way, this it will do, whenever, in the way appropriate to the capacity in question, it meets up with what is capable of being affected. And so whenever anything that is capable in accord with reason desires what it has a capacity for, and has it in the way appropriate [for its activation], it is necessary for it to do this. And it has the capacity [in this way] when the thing affected is present and in the relevant condition" (*Met.* IX 5 1047^{b}35–1048^{a}15).

Note 416
Self-controlled people, even when they desire and have an appetite for things, do not do these things for which they have the desire, but instead follow the understanding: "A self-controlled person seems to be the same as one who is also such as to stand by his rational calculation, and a person who lacks self-control seems to be the same as one who is also such as to depart from his rational calculation. A person who lacks self-control, knowing that the actions he is doing are base, does them because of feeling, whereas one who has self-control, knowing that his appetites are base, does not follow them, because of his reason" (*NE* VII 1 1045^{b}10–14).

Note 417
But apparently at any rate these two things do cause movement, either desire or understanding—if we posit the imagination as a sort of understanding: "The things that move an animal are thought, imagination, deliberate choice, wish, and appetite. And all these can be reduced to understanding and desire. For both imagination and perception have the same place [in causing movement] as understanding" (*MA* 6 700^{b}17–20).

Note 418
Many people follow their imaginations against their scientific knowledge: See III 9 433^{a}1–6n.

Note 419
Understanding, however, that is of the practical sort, which rationally calculates for the sake of something: Strictly speaking, the understanding is involved in rationally calculating, as in scientific demonstration, only as grasping the starting-points of these: "Understanding is concerned with things that come last in both directions. For concerning the primary terms and the things that come last, there is understanding but no reason—that is to say, on the one hand, in the case of demonstrations, understanding is of the unchanging and primary terms; on the other hand, in the case of those that are practical, it is of the last thing" (*NE* VI 9 1143^{a}35–^{b}3).

And differs from the theoretical sort in respect of the end: "What affirmation and denial are in the case of thought, that, in the case of desire, is just what pursuit and avoidance are. So, since virtue of character is a deliberately choosing state and deliberate choice is deliberative desire, it follows that both the reason must be true and the desire must be correct, if indeed the deliberate choice is to be an excellent one, and the very things the one affirms, the other must pursue. This, then, is practical thought and truth. In the case of thought that is theoretical, however, and neither practical nor productive, the good state and the bad state are truth and falsity (since that is the function of every part involving thought) but in the case of the part involving practical thought, the good state is truth in agreement with correct desire" (*NE* VI 2 1139^a21–31).

Note 420

The object of desire is the starting-point of practical understanding, and the last thing (*eschaton*) **is the starting-point of the action:** The relevant *eschaton* is the last thing found in deliberation or practical reasoning: "All deliberation is inquiry. And the last thing found in the analysis seems to come first in bringing about the result" (*NE* III 3 1112^b12–24). And this is at once "doable in action" (VI 8 1142^a23–25), and "a decree is doable in action, as the last thing" (1141^b27–28). For, unlike a universal law (*nomos*), a decree (*psêphisma*) is so adapted to particular circumstances as to render any further deliberation unnecessary: "This is also the cause of not everything's being regulated by law—namely, that there are some cases where it is impossible to establish a law, so that decrees are needed. For the standard of what is indeterminate is itself indeterminate, just like the lead standard used in Lesbian building. For the standard is not fixed but adapts itself to the shape of the stone, and a decree adapts itself to the things themselves" (V 10 1137^b28–32). In an individual human being, it is this that makes a decree a last thing, and so something doable in action. Thus practical calculation or deliberation begins with an end (*telos*) that an agent desires or wishes for, and concludes with a specification of what he can do to bring that end about. At the same time, since by acting in accord with that specification an agent is achieving his end, the end is itself a last thing: "The end (*telos*) is the best and last thing for whose sake all the other things are done" (*EE* II 1 1219^a10–11); "The end and that for which something is done is a last thing" (*Met.* V 16 1021^b29–30).

Note 421

If there were two things that caused movement, understanding and desire, they would cause movement in virtue of some common form (*eidos*): See III 10 433^b5–13.

Note 422

Understanding is always correct, whereas desire and imagination are both correct and incorrect: "If, then, the states by which we grasp the truth and never have false views about what cannot—or indeed can—be otherwise are scientific knowledge, practical wisdom, theoretical wisdom, and understanding, and understanding cannot be any of the three of these (by the three I mean practical wisdom, scientific knowledge, and theoretical wisdom), the remaining alternative is for understanding to be of starting-points" (*NE* VI 6 1141^{a}3–8).

Note 423

That is why what causes movement in every case is the object of desire, which is either the good or the apparent good: "Should we say that unconditionally and in truth the proper object of wish is the good, but to each person it is the apparent good? To an excellent person, it is what is truly the proper [= primary] object; to a base one, it is whatever random thing it happens to be. . . . In the case of ordinary people, however, deception seems to come about because of pleasure, which appears to be a good thing when it is not. So they choose what is pleasant as good and avoid what is painful as bad" (*NE* III 4 1113^{a}23–^{b}2).

Not every good, however, but the good that is doable in action: Aristotle sometimes writes as if the good and the good doable in action are the same: "the good is always found in action, whereas the noble is found also in immovable things" (*Met.* XIII 3 1078^{a}31–32). But sometimes, as here, he distinguishes these: "Even if there is some single good predicated in common of all intrinsic goods, a separable one that is itself an intrinsic good, it is clear that it would not be doable in action or acquirable by a human being" (*NE* I 6 1096^{b}32–34).

Note 424

What is doable in action is what admits of being otherwise: "What admits of being otherwise includes both what is producible and what is doable in action" (*NE* VI 4 1140^{a}1–2); "Deliberating is the same as rationally calculating, and no one deliberates about what does not admit of being otherwise" (VI 1 1139^{a}12–14). See also III 11 434^{a}16n.

Note 425

These differ more from each other than do the appetitive and the spirited parts: See III 9 432^{a}22–^{b}7.

Note 426

Desires come about that are contrary to each other: A fact Plato uses to divide the soul into three parts. The following is the argument for the separation of appetite (appetitive desires) and reason (rational desires): "[*Socrates*] The soul of the thirsty person, insofar as it is simply thirsty, does not want anything else except to drink, and this is what it longs for and is impelled to do. [*Glaucon*] Clearly. [*S.*] Then if anything in it draws it back when it is thirsty, wouldn't it be something different from what thirsts and, like a beast, drives it to drink? *For surely, we say, the same thing, in the same respect of itself, in relation to the same thing, and at the same time, cannot do opposite things.* [*G.*] No, it cannot. . . . [*S.*] Now, we would say, wouldn't we, that some people are thirsty sometimes, yet unwilling to drink? [*G.*] Many people often are. [*S.*] What, then, should one say about them? Isn't it that there is an element in their soul urging them to drink, and also one stopping them—something different that masters the one doing the urging? [*G.*] I certainly think so. [*S.*] Doesn't the element doing the stopping in such cases arise—when it does arise—from rational calculation, while the things that drive and drag are present because of feelings and diseases? [*G.*] Apparently so. [*S.*] It would not be unreasonable for us to claim, then, that there are two elements, different from one another; and to call the element in the soul with which it calculates, the rationally calculating element; and the one with which it feels passion, hungers, thirsts, and is stirred by other appetites, the irrational and appetitive element, friend to certain ways of being filled and certain pleasures" (*Rep.* IV 439a9–8). Since each of these parts has desires, however, such conflict also results in the partition of the desiring part of the soul, which Aristotle thinks is absurd (III 9 432^{b}4–5).

But this happens when reason and appetites are contraries, and occurs in beings that have a perception of time: This fact is supposed to undercut Plato's grounds for his division. The idea is perhaps this. Appetite has immediate pleasure as its object (III 10 433^{b}9), whereas understanding, because it looks to the future (to the long-term good), "understands and combines time in addition" (6 430^{a}31–^{b}1). When appetite is for O (a pleasant drink) and understanding is against O, then, they are contraries, but they do not violate the Platonic principle (italicized in the quote above) that assigns them to different parts of the soul. For the respect in which appetite is for O (immediate pleasure) is different from the respect in which understanding is against it (future overall pleasure or good).

What moves us will yet be one in form, namely, the desiring part insofar as it is desiring . . . although in number there will be more than one mover: This draws the desired conclusion from the adduced considerations. The desiring part is one in form "insofar as it is desiring." That is to say, even when the desiring part included contrary desires (one appetitive, the other rational or involving understanding), it is one or the other or both operating together that cause the action. If appetite is stronger than the wish that is part of practical understanding, it will cause an action which, because of its origins in both desires, will manifest lack of self-control on the agent's part. If wish proves stronger, the action will for the same reason manifest self-control.

Although in number there will be more than one mover: In actions resulting from conflicting desires both desires contribute to the causation of the action—if that were not so, the actions would not manifest either self-control or its lack. As a result there is more than one cause of the movement. But the desiring part, as such, does not have its unity threatened by this. It remains one in form, though not—in the relevant way—one in number.

But the primary [mover] of all is the object of desire, since it moves things without being moved, by being understood or imagined: A reminder that the part of the soul that causes movement is a "moved mover," one that is caused to move by something else—the object of desire—which, as its "unmoved mover," is the primary cause of movement: "this is the way the object of desire and the intelligible object moves things: it moves them without being moved" (*Met.* XII 7 1072^{a}26–27).

Note 427

The instrument by which desire moves it, this now is something bodily: "The movement of animals is like that of automata, which are set moving when a small movement occurs: the strings are released and the pegs strike against one another. . . . For animals have instrumental parts that are of the same kind as these, namely, sinews and bones; when these are relaxed or loosened movement occurs. . . . In an animal, however, [unlike in an automaton] the same part has the potentiality to become both larger and smaller and to change its shape, as the parts expand because of heat, contract again because of cold, and undergo alteration. Alteration, however, is caused by appearances, sense perceptions, and intelligible objects. For sense perceptions are an immediate kind of alteration, and appearances and intelligible objects have the power of the things themselves [that gave rise to them]. For in a way the intelligible form of the pleasant or painful is like the thing itself. That is why we shudder and are frightened because of understanding on its own. All these are affections and alterations; and when things in the body are altered, some become larger and some smaller. And it is not hard to see that a small change occurring in a starting-point produces great and numerous changes at a distance from it—just as by shifting the rudder a hair's breadth you get a large shift at the prow. Besides, when under the influence of heat or cold or some other similar affection, an alteration is produced in the region of the heart, even in an imperceptibly small part of it, it produces a large difference in the body—blushing, for example, or turning white, as well as shuddering, trembling, and their opposites" (*MA* 7 701^{b}1–32). What enables bodily parts, but not parts of automata, to become larger or smaller is the presence of *pneuma*, which as a constituent of the blood, has its origin in the heart, and is the instrument by which desire moves the body (Introduction, pp. xx–xxiii). For when we perceive, imagine, or understand something pleasant or in some other way good, small motions that code for it—that transmit its perceptual or intelligible form—are produced in the relevant part of the soul, whether sense organ, imagination, or understanding. From there they are transmitted to other parts of the soul, such as the desiring part, where they trigger movements of the sinews and joints that are relevantly like those produced in automata by the small movement of the release mechanism that sets them moving.

Note 428

But to speak for now in summary form . . . : Aristotle returns to the analogy of the ball and socket in III 11 434^{a}10–16.

Note 429

Imagination is either rationally calculative or perceptual: See III 11 434^{a}5–10.

Note 430

The incomplete animals: See III 1 425^{a}10, III 9 432^{b}23.

Note 431

Is it that just as they are moved in an indeterminate way, so too appetite and imagination are present in them—but in an indeterminate way? This apparently corrects the claim at III 3 428^{a}8–11 that grubs, unlike ants and bees, lack imagination. The idea now is that they may possess these in a vestigial way corresponding to the narrow range of ambulatory movements of which they are capable.

Note 432

We must measure by one [standard]: Suppose a shoemaker is trying to decide how many pairs of shoes he should exchange for the house he needs. How is he to do so on a rational basis? Aristotle's answer may be gleaned from the following passage: "The builder must get from the shoemaker the shoemaker's work and give him his own work in return. . . . These works, then, must be equalized. . . . That is why everything that is exchanged must be in some way commensurable. It is for this purpose that money has been introduced and becomes a sort of mean. For since it measures everything, it also measures excess and deficiency and how many shoes are equal to a house or food. Just as builder is to shoemaker, then, so must such-and-such number of shoes be to a house or food. For if this does not happen, there will be no exchange. . . . And it will not happen unless the things in question are in some way equal. Hence *they must all be measured by some one thing*. . . . In truth, this one thing is need, which binds everything together. For if people neither needed things nor needed them to a similar extent, either there would be no exchange or not the same one. But as a sort of exchangeable representative of need, money came into existence on the basis of convention and is called 'money' [*nomisma*] because of this, because it exists not by nature but by conventional law [*nomos*], and changing it or rendering it useless is up to us. . . . *In truth, to be sure, it is impossible that things so different should become proportionate, but in relation to our needs they can become adequately so.* There must, then, be some single measure, but it will be one based on a hypothesis, which is why it is called 'money.' For money makes everything proportionate, since everything is measured in money" (*NE* V 5 1133^{a}8–^{b}23).

Since we are pursuing the greater [good]: "Someone with understanding chooses the better of two things in all cases" (*EE* VII 2 1237^{b}37–38).

Note 433

This is the cause of these animals seeming not to have belief: See III 3 427^{b}25n.

Namely, that they do not have the [imagination] that results from a deduction: Since "we posit the imagination as a sort of understanding" (III 10 433^{a}10), and an intelligible object is always understood as present in a perceptible one (III 7 431^{b}2), the following passage illustrates what Aristotle has in mind: "How does it happen that understanding is sometimes followed by action sometimes by inaction, that is, sometimes by moving and sometimes by not moving? What happens seems parallel to the case of understanding and syllogizing about unchanging objects. There, however, the end is a theoretical proposition (for when one has understood the two premises, one has understood—that is, put together—the conclusion), whereas here the conclusion that follows from the two premises [being put together] becomes the action. Some examples: whenever someone understands that every man should take walks, and that he is a man, at once he takes a walk, or if he understands that no man should take a walk now, and that he is a man, he at once stays put. And he does each of these things provided nothing prevents him [from doing it] or compels him [to do something else]" (*MA* 7 701^{a}7–16).

But this has that: Retaining αὕτη δὲ ἐκείνην, which OCT secludes. The reference of the demonstrative pronouns *hautê* ("this") and *ekeinên* ("that") is not entirely clear. But *hautê* most probably refers to "the [imagination] that results from a deduction" and *ekeinên* to "belief." In any case, Aristotle does think that the part of the soul that forms beliefs (*doxastikon*) is the same as the part that calculates or deliberates (*NE* VI 5 1140^{b}25–26, 13 1144^{b}14–15).

Note 434

That is why desire does not have the deliberative capacity (*to bouleutikon ouk echei hê orexis*): Desire comprises appetite, spirit, and wish (II 3 414^{b}2). The latter is always on the side of—or in accord with—deliberation (III 10 433^{a}23–25), but appetite is for immediate pleasure (II 3 414^{b}6, III 10 433^{b}8), and so can conflict with wish, in a way that it could not if both were on the side of deliberation. No doubt something similar is true of spirit as well, since it is "hot and hasty" (*NE* VII 6 1149^{a}30). So the desiring part is not as a whole in accord with deliberation.

But sometimes defeats and moves wish, whereas sometimes wish does this to it, just like a ball: Reading νικᾷ δ' ἐνίοτε καὶ κινεῖ τὴν βούλησιν, ὁτὲ δ' ἐκείνη ταύτην, ὥσπερ σφαῖρα with many mss. for OCT νικᾷ δ' ἐνίοτε καὶ κινεῖ ὁτὲ μὲν αὕτη ἐκείνην, ὁτὲ δ' ἐκείνη ταύτην, ὥσπερ σφαῖρα σφαῖραν.

Just like a ball (*hôsper sphaira*), **one desire does it to the other desire, as when lack of self-control occurs:** The description of desire (in particular, appetite) as defeating and moving wish (the desire that is in accord with deliberation) in this way does not mean that these desires hit one another like billiard balls. Instead, Aristotle is returning to the simile of the hinge or ball-and-socket joint (III 10 433^{b}22–27). Wish in being for the ultimate end of action (the good), which is grasped by scientific knowledge or understanding, is by nature fixed, like the concave socket. The desire it moves (as in cases of self-control) is thus described as like a ball or sphere, since it now joins wish in producing the action dictated by the ball-like minor premise of the agent's deliberative deduction, which will be explicitly referred to in a moment (11 434^{a}16–21). In cases of lack of self-control, wish is moved, against deliberation, by appetite. The movement is against nature in just the way that a socket's being moved by an arm held fixed is an unnatural movement.

By nature the higher (*hê ano*) **is more ruling** (*archikôtera*) **and causes movement:** "The most ruling (*archikôtatê*) of the sciences—that is, the one that is ruling rather than subordinate (*hupêretousês*)—is the one that knows that for the sake of which each thing is to be done, and this is the good of each of them, and in general the best good in all of nature" (*Met.* I 2 982^{b}4–7); "Prescribing is what is more ruling (*archikôteron*)" (*Pol.* IV 15 1299^{a}27–28). *Hê ano* is coordinate with *hupêretousês* and refers to the place of a science in a hierarchy of sciences: "Politics seems to be like this [namely, to be the most architectonic science], since it is the one that prescribes which of the sciences need to exist in cities and which ones each class in cities should learn and up to what point. Indeed, we see that even the capacities that are generally most honored are under it—for example, generalship, household management, and rhetoric. And . . . it uses the other practical sciences and, furthermore, legislates about what must be done and what avoided" (*NE* I 2 $1094^{a}26$–$^{b}6$).

Note 435

There are already three spatial movements (*treis phoras*) **caused:** The three could be (1) The one caused by appetite, the one caused by wish, and the one caused by "the higher and more ruling" element. (2) The one manifesting lack of self-control (appetite overcomes opposing wish); the one manifesting self-control (wish overcomes opposing appetite); the one manifesting virtue of character (wish and appetite work together in harmony). On the assumption, which seems justified, that "the higher and more ruling" element is "the scientific part," the sentence that follows seems more relevant to (2) than to (1), which should perhaps be preferred on these grounds.

Note 436

But the scientific part (*epistêmonikon*) **is not moved** (*ou kineitai*), **but remains at rest:** In *NE* VI 1, Aristotle distinguishes the scientific part of the soul from the rationally calculative part: "Previously, then, we said that there are two parts of the soul, one that has reason and one that lacks reason. Let us now divide in the same way the part that has reason. Let us take it that there are two parts that have reason—one through which we get a theoretical grasp on those beings whose starting-points do not admit of being otherwise and one through which we do so on those that do admit of being otherwise, since where beings differ in kind, parts of the soul that differ in kind are naturally suited to each of them, since it is on the basis of a certain similarity and kinship that they have knowledge. Let us call one of these 'the scientific part' and the other 'the rationally calculative part.' For deliberating is the same as rationally calculating, and no one deliberates about what does not admit of being otherwise. So the rationally calculative part is one distinct part of the part that has reason" ($1139^{a}3$–15). We might expect, therefore, that he would refer to the rationally calculative part here, since it is the one most relevant to action, rather than to the scientific one, which is concerned with unalterable necessities—things that do not admit of being otherwise.

The reason he does not do so is that what is "not moved but remains at rest" is not the rationally calculative part as a whole, since it contains wish (*DA* III 9 $432^{b}5$), which is moved by its object (10 $433^{a}27$–29), but rather the understanding, which is what grasps starting-points both in theoretical demonstrations and in practical deliberations or rational calculations, both of which are syllogistic in form (next note): "Understanding is concerned with things that come last in both directions. For concerning the primary terms and the things that come last, there is understanding but no reason—that is to say, on the one hand, in the case of demonstrations (*apodeixeis*), understanding is of the unchanging (*akinêton*) and primary terms; on the other hand, in the case of those that are practical (*en tais praktikais*), it is of the last thing and the one that admits of being otherwise and the other premise, since these are starting-points of the end, as it is from particulars that universals come. So of these we must have perception, and this is understanding" (*NE* VI 11 1143^{a}32–^{b}5). Though this passage is difficult, it seems to countenance roles for understanding in both theoretical and practical demonstrations (the antecedent of *en tais praktikais* is *apodeixeis*). In each it grasps the unchanging term.

In the case of the practical ones (our sole concern here), this is the term that refers to the object of desire (or wish): "what moves us will yet be one in form, namely, the desiring part insofar as it is desiring (but the primary [mover] of all is the object of desire, since it moves things without being moved (*ou kinoumenon*), by being understood" (*DA* III 10 433^{b}11–12). And this object—when never erring understanding is what grasps it—is the good doable in action (433^{b}26–29). This, however, is twofold. On the one hand, it is an unchanging universal: "the human good turns out to be activity of the soul in accord with virtue and, if there are more virtues than one, then in accord with the best and most complete" (*NE* I 7 1098^{a}16–18). The understanding (scientific knowledge) of this is unchanging, since the definition never changes. On the other hand, the good doable in action is what in these circumstances fits the definition, or what in them constitutes activity of the soul in accord with virtue. This "admits of being otherwise" (*DA* III 10 433^{a}29–30) because it is a different particular action in different circumstances—courageous in one, temperate in another. This is grasped by perception, but since it involves subsuming what is perceived under a universal grasped by understanding, it also involves understanding, since perception alone cannot grasp universals except coincidentally: "it is only coincidentally that sight sees universal color, because this [particular instance of] color that it sees is *a* color" (*Met.* XIII 10 1087^{a}19–20).

Note 437

And since the one supposition and premise is universal and the other is particular (for the first says that any man of such-and-such a sort should do an action of such-and-such a sort, and the second that this is an action of such-and-such a sort, and I am a man of such-and-such a sort), either it is the latter belief that produces movement, not the universal one, or it is both, but the one remains entirely at rest, while the other does not: We deliberate "not about ends, but about what furthers ends" (*NE* III 3 1112^{b}11–12). And, like reasoning in the broadly theoretical sciences, deliberation is "a type of syllogizing" (*Mem.* 2 453^{a}13–14; also II 1 412^{a}11n). But whereas theoretical deductions have a propositional conclusion, practical ones conclude in an action: "One [premise] is a universal belief, whereas the other is concerned with particulars, which perception already controls. But when a single belief comes about from these, the soul, in one sort of case, necessarily affirms what has been concluded, whereas in productive [= practical] cases it acts straightaway. For example, if everything sweet should be tasted and this (as one of the particulars) is sweet, it is necessary for someone who is able and not prevented also to do this at once" (*NE* VII 3 1147^{a}25–31); "the conclusion that follows from the two premises [being compounded] becomes the action" (*MA* 7 701^{a}12–13).

But though the conclusion of a practical or deliberative deduction is an action, the last thing reached in deliberation is not an action but a decree (*DA* III 10 433^{a}16–17n). Thus conclusion and last thing—though readily confused—are not the same. It is "the final premise," as a belief about something perceptible and doable in action, that controls actions (*NE* VII 3 1147^{b}9–10). We can see this plainly in the following description of productive deliberation: "From craft come the things whose form is in the soul of the producer—and by form I mean the essence of each thing and the primary substance.... For example, health is the account in the soul, the scientific knowledge [of the form]. So the healthy thing comes to be as follows: Since health is this, necessarily if the thing is to be healthy this must be present—for example, a uniform state—and if the latter is to be present, there must be heat, and he goes on, always understanding like this, until he is led to a last thing that he himself is able to make. Then the process from this point onward, toward health, is called production. . . . Of comings-into-being and processes, one part is called understanding and the other producing—what proceeds from the starting-point and form is understanding, what proceeds from the final stage of understanding is producing" (*Met.* VII 7 1032^{a}32–^{b}17).

Since understanding is what grasps starting-points, in the case of crafts it is also called "having theoretical knowledge of how something may come-to-be," while the phase called "producing" is called "crafting" (*NE* VI 4 1140^{a}11–12). Just as producing or crafting follows on the grasp by understanding of the last thing, thus serving as the conclusion of the doctor's deliberation, so action follows on the grasp by understanding of the last thing in practical deliberation. For once the relevant decree is reached, nothing remains except to act on it immediately: "What is deliberated about and what is deliberately chosen are the same, except that what is deliberately chosen is already something definite, since what is deliberately chosen is what is discerned on the basis of deliberation" (III 3 1113^{a}2–5). But act on it the agent must if he is to be practically-wise. For just as what one believes is what one affirms in the calculative part of one's soul (VI 9 1142^{b}13–14), so what one believes in a practical or action-causing way is what one both affirms there, effectively desires to do, and so does (VI 2 1139^{a}21–31).

Hence if practical deliberation is to be action-causing, it is not enough that the last thing reached in it—the decree—be believed or affirmed in thought (as with a theoretical conclusion); in addition it must be acted on, which is why "someone does not have practical wisdom simply by knowing; he must also act on his knowledge" (*NE* VII 10 1152^{a}8–9). It follows that the conclusion cannot be a proposition of any sort but must be an action that makes the (propositional content of the) decree true.

The ultimate end at which we aim in all our actions is the good doable in action: "if there is some end of all the things doable in action, this will be the good doable in action" (*NE* I 7 1097^{a}22–23). So the ultimate or unconditional topic for the practical deliberator is: what in these circumstances constitutes the good doable in action, G. He will have answered it when he finds a middle term F for his deliberative deduction that has the following features: first, doing an action that is F in these circumstances will best further G; second, an F action is one he can do (or begin to do) in these circumstances without doing anything else; third, an F action is one he can tell he is doing on the basis of perception, "when actually doing" it (*EE* II 10 1226^{a}37).

A deduction with these major and minor premises need not—and typically will not—embody the entirety of the deliberator's reasoning or inquiry, but it does constitute its focus: it tells him what he is ultimately looking for, namely, a middle term with the requisite features. Nonetheless, to find such a term he may need to find many other things first. Some of these a science or craft may provide, some may be provided by perception, some he may need to find by further deliberating or syllogizing, some will identify external means to his subordinate ends, others their essential components. But all of them will fall under the umbrella of his focal deduction. So that in being the focus of his deliberation it is also the organizing and unifying principle of his plan of action. It is the complex action implementing this entire unified plan, in turn, that constitutes his acting well, or achieving G.

Because all practical syllogizing—all deliberation—has a deduction of this kind as its organizing focus, we may take it as our paradigm case and assign it the following schematic form:

Major premise:	Definition of G
Minor premise:	Decree
Conclusion:	Action

Deliberation, as a consequence, will consist in a search for a decree connecting the definition of G to something that can be acted on directly, using perception. That is why just two errors are possible in practical syllogizing: "In all cases, doing it well consists in two things: setting up the target and end of action correctly and discovering the actions that further it. These factors can be in harmony with one another or in disharmony. For people sometimes set up the end well but fail to achieve it in action; and sometimes they achieve everything that furthers the end, but the end they set up is a bad one. Sometimes they make both errors. For example, in medicine it sometimes happens that doctors are neither correct in their judgment about what condition a healthy body should be in, nor successful in producing the condition they have set up as their defining-mark" (*Pol.* VII 13 1331^{b}26–37). The formal invalidity of the deduction is omitted, presumably, because it is not a peculiarly deliberative matter. Hence, though it contaminates deliberation, it is not a defect peculiar to it, which it is part of its specific virtue or correctness to avoid.

The error in setting up the end if you are a doctor consists in getting the definition of health wrong: the condition of the body you think is health is not health. If you are an agent, it consists in getting the definition of G wrong: you think that the good doable in action consists in satisfying your appetites or acquiring high honors, but you are wrong. As errors about the essential and necessarily true definitions of universals, which are established inductively, not deliberatively, these too are scientific errors, not specifically deliberative ones. But the second error, which consists in being wrong about what best furthers the end you may have set up quite correctly, is a deliberative one. It is described as reaching the correct end by "a false deduction, that is, reaching the thing that should be done, but not by the means one should, the middle term being false" (*NE* VI 9 1142^{b}22–24).

What G in fact is, is determined by our unchangeable nature and function: "the human good turns out to be activity of the soul in accord with virtue and, if there are more virtues than one, then in accord with the best and most complete. Furthermore, in a complete life" (*NE* I 7 1098^{a}16–18). Hence the definition of it that serves as a deliberative deduction's major premise is itself fixed and unchangeable—which is another reason we cannot deliberate about it. Its being so, in fact, is an essential condition of the deduction itself being practical or action determining. This is so because for something to produce movement it has to have a ball-and-socket-like structure (*DA* III 10 433^{b}22–27), in which something is fixed (the socket, the definition of G and the understanding's scientific knowledge of it) and something else moves (the ball, the practical deduction's minor premise). The scientific knowledge of the universal premise cannot change, since it is a state whose object is a necessary truth concerning the relations between the universals F and G. So by nature it remains fixed from situation to situation. Which particular action will be F and which particular man will be such as to be able or required to do it, on the other hand, do change from one situation to another.

Note 438

Perception, on the other hand, is not necessarily present in all living things, since those things that have a body that is simple cannot have touch: Following OCT in deleting οὔτε ἄνευ ταύτης οἷόν τε οὐθὲν εἶναι ζῷον ("and without this nothing can be an animal") after "touch" and reading it at the end of the next sentence. Touch is presupposed by the other perceptual capacities, so that anything that lacks touch cannot have any perceptual capacities at all (II 2 413^{b}4–7).

[1] Those things that have a body that is simple (*haploun*) cannot have touch, and neither can [2] those that are not receptive of the forms without the matter: If a *haplous* body is one composed of a single element (as II 4 416^{a}28, III 1 424^{b}30, and 434^{b}10 suggest), [1] seems to suggest the wrong connection. For plants lack touch, though they are not simple, but have only "a greater proportion of earth," rather than earth alone, in their composition (*Juv.* 19 477^{a}27–28). Moreover, the distinction between [1] and [2] becomes not entirely clear. For the reason that plants cannot touch is that they do not have the "mean" needed in order to be receptive of tangible objects (II 11 424^{a}32–^{b}3).

Not receptive of the form, without the matter: See II 12 424^{a}18–19, III 2 425^{b}24.

Note 439

If nature does nothing pointlessly: See III 9 432^{b}21n.

Note 440

Its end, which is the function of nature: "The nature is the end or the for-the-sake-of-which" (*Ph.* II 2 194^{a}27–28); "Each thing that has a function is for the sake

of its function" (*Cael.* II 3 286^{a}8–9); "The for-the-sake-of-which is the function" (*Met.* III 2 996^{b}7); "The function is the end, and the activity is the function" (IX 8 1050^{a}21–22).
Function: See I 1 402^{b}12n.

Note 441

Indeed, even if it is not generated: Retaining ἀλλὰ μὴν οὐδὲ ἀγένητον with OCT, against Hicks and Hamlyn.
Even if it is not generated: The best candidates for being the ungenerated bodies referred to are the various translucent ethereal spheres or heavens that Aristotle recognizes, to which the various heavenly bodies—sun, moon, stars, and so on—are attached. For while "none of these bodies can undergo a spatial movement of an animate nature" (*Cael.* II 9 291^{a}23–24), we nonetheless should not think of them "as bodies alone, that is, as unitary things that, although they have an order, are otherwise wholly inanimate, but we should posit them as having a share of action and life" (12 292^{a}18–21). This share they acquire, apparently, by being attached to their given sphere, the outermost of which is the primary heaven, or sphere of the fixed stars, whose center coincides with the center of the universe (14 296^{b}6–18) and whose periphery coincides with its outermost boundary (I 6 273^{a}7–13). For the movement of this sphere, as well as the others, does seem to be animate movement—at least *of a sort*.

Here is why. In the case of sublunary animals, up and down, front and back, right and left are not just spatially or relationally distinguished but functionally and absolutely so: "the part from which the distribution of nourishment and growth derives in each living thing is up and the last part toward which this travels is down—the one is a sort of starting-point, the other a limit; and up is a starting-point" (*IA* 2 705^{a}32–^{b}2). Similarly, the front is a starting-point, because it is where the organs of perception are located (4 705^{b}10–13). Even in earthworms, where right and left are more difficult to distinguish, the functional difference between them still exists: "the starting-point of the movement is the same in all animals and by nature has its position in the same place; and it is from the right that the starting-point of movement derives" (5 706^{a}10–13).

In the case of the primary heaven, the same applies not just to right and left but to all six functionally defined directions: "We should not be puzzled, because the shape of the universe is spherical, about how there will be a left and a right of it when all its parts are similar and all the time moving. We should instead understand it as being just like a thing in which there is a difference between right and left, and other shape-related aspects, about which a sphere has then been placed, since it will possess the difference in function, but will seem not to, because of the uniformity of the shape. It is the same way with the starting-point of movement. For even if it never began moving, all the same it must have a starting-point from which it would have begun if it had begun moving, and, if it were to come to a stop, from which it would start moving again" (*Cael.* II 2 285^{a}31–^{b}8). We can see how a similar line of thought might be extended from the spheres having a concealed starting-point of movement to their also having concealed organs of perception.

The fact that the movement of the spheres is fixed, however, and that the spheres themselves have no clear need of nourishment, means that the argument from such a need to the possession of perception does not apply to them. Nonetheless, the primary heaven does need an understanding in order to discern and be moved by the primary god as unmoved mover: "The primary heaven must be eternal. There is, therefore, also something that moves it. But since what is moved and moving something also is an intermediate, there is a mover that moves without being moved, being eternal, substance, and activity [= the primary god]. This, though, is the way the object of desire and the intelligible object moves things: it moves them without being moved. . . . For the starting-point is the active understanding. And understanding is moved by intelligible objects" (*Met.* XII 7 1072^{a}23–30). The understanding of a sublunary animal with a soul and body, however, cannot grasp an intelligible object except as present in an appearance (*DA* III 7 431^{a}14–17, ^{b}2–3) and cannot be appeared to unless, at a minimum, it has perception. If the same argument applies to the various celestial spheres, we can see why Aristotle might think that they too need some sort of perception.

The spheres are made of ether, which is, of course, one element, suggesting that the spheres are simple bodies, and so cannot have touch or any of the other perceptual capacities, since they presuppose it. But in fact the ether that constitutes them is not entirely without some admixture. For the closer a sphere gets to the earth, the less pure is the ether of which it consists: "We say that the upper region as far down as the moon (*mechri selênês*) is occupied by a body [= ether] different from air or fire, but varying in purity and freedom from admixture, and admitting of variation (*diaphoras echein*), especially toward its limit on the side of the air, and the heavens surrounding the earth" (*Mete.* I 3 340^{b}6–10; also *Cael.* I 2 269^{b}15–17, II 4 287^{b}20–21). It is not entirely clear, to be sure, what the contaminating element is, but some sort of air seems the most likely candidate, since it is at any rate in contact with the spheres: "light and fire arise from the stars as the air undergoes friction as a result of their movement" (*Cael.* II 7 289^{a}19–21). But just what sort of air this is and how it differs from the air that seems to be confined to the sublunary realm—something Aristotle tries to explain in *Mete.* I 3 340^{b}4–341^{a}36—is another not entirely understood story.

It seems reasonable to conclude, all these things considered, that Aristotle may not have seen any conflict between thinking of the heavenly spheres as having life—and so as having touch and perhaps other perceptual capacities as well—and thinking that simple bodies, composed of a single element, cannot have touch (*DA* III 12 434^{b}9–11).

Note 442

Air, however, is moved to the greatest extent, and acts and is acted upon, if it remains in place as one thing: See II 8 419^{b}18–22.

Note 443

Sight issuing [from the eye] is reflected back: See Plato, *Ti.* 45b–46c.

Note 444

The seal [pressed] into the wax: See II 12 424^{a}17–24.

Were to pass on to the extent of reaching the limit: See III 2 437^{a}13n.

Note 445

Every ensouled body is capable of touch, as we have said: At III 12 434^{b}10–24.

Note 446

The differentiae of earth: Namely, cold and dry. Those of water are cold and wet; of air hot and wet; of fire hot and dry (*GC* II 3 330^{a}30–^{b}7).

Note 447

Flavor too destroys only insofar as it is at the same time capable of touch: It is not the flavor of the arsenic that kills, but its tangible effects on the cellular processes that produce ATP.

Note 448

And a tongue so that it may signify something to another: See II 8 420^{b}13–22.

Further Reading

Detailed and regularly updated bibliographies of works on Aristotle's psychology, and on his philosophy generally (both compiled by Christopher Shields) are available online at:

https://plato.stanford.edu/entries/aristotle-psychology/
http://plato.stanford.edu/entries/aristotle/

Thesaurus Linguae Graecae (http://www.tlg.uci.edu) has excellent searchable Greek texts and English translations of Aristotle's writings, with linked dictionaries and grammars.

Editions of the *De Anima*, translations of it, and commentaries on it are listed under Abbreviations at the beginning of the present volume.

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Index of Terms

Note: Page numbers omit the initial 4, so that 02^{a}–35^{b} = 402^{a}–435^{b}. References are typically to key doctrines or discussions in the text and, when in bold, in the associated notes.

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